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Massachusetts Medical Society.

ANNUAL MEETING OF THE SOCIETY, JUNE 9, 1915. PAPERS ON PUBLIC HEALTH AND PREVENTIVE MEDICINE.*

(Each speaker being limited to ten minutes.)

I.

THE WORK AND AIMS OF THE STATE DEPARTMENT OF HEALTH.†

By ALLAN J. McLAUGHLIN, M.D., BOSTON.

PREVENTIVE medicine or the scientific prevention of disease is comparatively new. In the days before Pasteur and Koch revolutionized our ideas of the causation of disease, health officers were fighting in the dark, by shotgun methods, against unknown terrors. Every disease and every plague was a mystery in its causation and methods of transmission.

After the establishment of the germ theory on a sound basis, laboratory and research workers all over the world began to work out the problems of the various diseases. In order to fight these epidemic diseases intelligently it was necessary to know the cause and how they were transmitted from person to person. In the past thirty-five years the causes of nearly all the so-

* A paper on Cancer by Dr. Edward Reynolds, Boston, will be found in the Cancer Number of the Boston Medical and Surgical Journal, July 15, 1915.

† Read before The Massachusetts Medical Society, June 9, 1915.

called contagious diseases have been discovered and we have learned how to destroy these germs and prevent the spread of the disease.

We know now that tuberculosis of the lungs is caused by the tubercle bacillus, and that if we could control the sputum of consumptives, the disease would disappear from our statistics.

We know that typhoid fever is due to taking into our mouths with food or drink the typhoid bacillus. In other words, we do not catch typhoid; we eat it.

We know that yellow fever and malaria are caused by parasites which can only be transferred from patient to patient by means of a certain kind of mosquito.

We know that bubonic plague is not transferred from man to man, but is a rat disease, and man receives his infection through the medium of the rat fleas.

We know that Asiatic cholera is caused by a germ (because of its shape called the comma bacillus) which is transmitted in the same way as typhoid fever, that is, by means of food and drink.

We know that typhus fever, which is responsible for such frightful ravages in Serbia, is transmitted from person to person by means of the louse, and in no other way. We not only know the cause of disease, but we also know in nearly all cases how these diseases spread. We know that tuberculosis, diphtheria, scarlet fever, measles, pneumonia, whooping cough, influenza, and common colds are spread through discharges from the mouth and nose. We know that if we can keep all traces of intestinal discharges out of our food and drink, we will have no Asiatic

cholera, no typhoid fever, no dysentery, and no hookworm disease. We know that vaccination prevents smallpox; that the Pasteur treatment prevents rabies; that inoculations with special prophylactics will protect against cholera, typhoid and plague. We know that diphtheria antitoxin will not only cure diphtheria, but it will also prevent it.

It is evident that what we need is not more knowledge of causation and modes of spread of epidemic diseases, but a more general application of the knowledge we already possess. With this knowledge of how to prevent epidemic disease, why is it that these diseases are still responsible for thousands of deaths each year? Simply because this knowledge cannot be applied without the coöperation of the layman with the health authorities. The attitude of the average layman toward the health department is one of indifference—he feels that some one is paid a salary for safeguarding the public health, and that the citizen has no obligation or concern in the matter. He does not know that the most competent health officer is powerless to reduce disease beyond a certain point without his help.

It is commonly stated that public health is purchasable and this is true, but it is only fair to explain how the purchase must be effected. We health officers speak of preventable diseases, and often neglect to state how, and to what degree, they are preventable. Expert, competent health officers, adequately paid, ample health appropriations, and strong laws will not suffice to eradicate disease unless backed by intelligent public opinion and by the hearty coöperation of the individual citizen. Public health is purchasable, but a large part of the purchase money must be expended in teaching the layman how he may prevent disease by personal hygiene. He must be made to feel that he is an integral part of the health organization, and that his coöperation is necessary to prevent sickness and death among his neighbor. Preventable diseases may be reduced by official action, but can never be entirely eradicated without the support of the layman. An ideal State Health Department should consist of not only the officials on its payroll, but should include all physicians and nurses and every intelligent layman in the State. This ideal may seem far from attainment, but the only way in which it can be accomplished is by means of popular education.

Let us consider what are the big factors in our general death rate and in what way you may help in their reduction. There were over 50,000 deaths in Massachusetts in 1913. About 70% of these, or more than 35,000, were due to the following causes:—

Infant mortality	10,086
Pneumonia	6,124
Organic heart disease	5,402
Tuberculosis	5,402
Cancer	3,526
Apoplexy	3,451

Bright's disease	2,888
Syphilis	?
Diphtheria	628
Measles	315
Scarlet fever	293
Typhoid	280
Whooping cough	239
Influenza	204

These great factors in our problem: infant mortality, pneumonia, organic heart disease, tuberculosis, cancer and the so-called degenerative diseases, cannot be greatly reduced by laws and ordinances, or other purely official activity, and significant reductions in the same can only be effected by the spread of the gospel of right living and personal hygiene through the medium of popular education.

The possibilities in preventive medicine of medical inspection of school children are not being realized as fully or as rapidly as is desirable. There is a lack of a central directing authority competent to ensure uniformity of methods and coördination of effort along the lines of prevention, rather than the detection of disease. Our greatest hope for ultimate success in the suppression of tuberculosis must lie in the prevention of the development of tuberculosis in the child with a pre-disposition for, or latent infection with, tuberculosis. There is also great need for instruction in the diagnosis of tuberculosis before processes in the lungs are present. Teaching of diagnosis in most medical schools is limited to the demonstration of the tubercle bacilli in the sputum and the physical signs in the lungs of well advanced cases. With the development of our system of inspection of school children to its full hygienic possibility, there will be a great need of examining physicians skilled in the newer methods of technic able to make diagnosis with reasonable certainty in the very early stages.

I believe that the time has arrived for a state-wide organization of all those interested in public health education. I believe that such an organization should include all health officers and every agency engaged in public health nursing or social service, or the teaching of hygiene in this Commonwealth. Organization is necessary to secure coöperation, to prevent duplication, and to get the full value of the efforts made and the money expended for public health education. It matters little which disease or problem we may be considering, after the health officials have eliminated all the factors which are corrigible by official action, there always remains a group of factors which can only be eliminated by the enlightened coöperation of the individual families or of the individual members of those families.

Health officers are justified in being proud of the achievements in the prevention of disease and the reduction of the death rates which are recorded in recent years, due largely to official activity. We have now reached a point, however, where further progress demands the hearty

support of the individual citizen, and a wider application of the principles of personal hygiene by the individual citizen himself. This means education of the people in their obligations to their neighbors, and in the simple gospel of disease prevention. We have enlisted in this campaign the practising physician as an educator in preventive medicine, and I am confident we may count on his earnest effort and loyal support. There are the great thousands, however, who never or rarely call a physician, and who furnish the bulk of infant and tuberculosis mortality.

I am sure that all practical health officers have found that the greatest defect in the average health organization has been the lack of a medium for carrying effective sanitary instruction into the home. To reach these people, two very effective agencies are in our hands, and great results may be obtained if these agencies are properly directed, so that uniformity of procedure and coördination of effort can be secured under a central authority. I refer to the possibilities of public health or visiting nursing and to the hygiene of school children.

In view of the great reductions already effected in the mortality rates for tuberculosis, typhoid fever, diphtheria, and other diseases, largely due to official activity, it may be said in Massachusetts that further reductions will be in direct ratio to the number of women employed in public health nursing. The successful visiting nurse requires, besides a knowledge of the prevention of disease, tact, patience, and kindly solicitude for the welfare of the poor. Compare the results possible in life saving by the work of such a woman, with the results obtained from the work of the male sanitary inspector, at the same or even at a larger salary.

II.

LOBAR PNEUMONIA.*

By FREDERICK T. LOEB, M.D., BOSTON.

It is fitting that lobar pneumonia should head the list of the special subjects under consideration today, since its victims comprise about ten per cent. of the total mortality. The persistently high death rate from pneumonia, in comparison with the encouraging decline in many other of the acute infections, indicates that in spite of our increasing knowledge of the disease the factors of importance in diminishing its spread are not as yet understood or are improperly applied. To avoid the error of failure of application of already existing knowledge to the problem from the point of view of public health it is desirable to consider those features which seem of most importance in this connection.

The influence of the seasons has long been recognized as a most important predisposing factor in pneumonia. The "pneumonia season"

embraces the colder months of the year, and it is worthy of note that this increased incidence of pneumonia at this time coincides with the period of greatest prevalence of all the acute respiratory infections and of exacerbations of the chronic infections. The reasons for this are not wholly clear, but a greater amount of dust, less abundant sunshine and the tendency to live under less satisfactory hygienic conditions, in more crowded and less well ventilated rooms at this season are probably of importance.

Pneumonia is usually regarded as an endemic disease, each case having little apparent connection with other cases. Direct contagion of pneumonia from one person to another cannot often be established. The occurrence of instances of more or less severe local outbreaks are, however, sufficiently common to indicate a mildly epidemic character, which most often become manifest among persons housed in overcrowded quarters as on ship-board, in barracks and in jails. Dispersion of those living in such close quarters may be followed by a diminished incidence of the disease. The infrequency of apparent contagion from one pneumonia patient to another cannot be safely relied upon as an assurance against the communicable nature of the pneumococcus infection upon which the disease depends.

The biology of the pneumococcus is such as to indicate that it cannot long maintain its existence outside the body. It grows only at body temperature and its viability under artificial conditions is short. Like the tubercle bacillus and certain other pathogenic organisms, it can maintain its existence only by passage from person to person. Contagion must then be the manner of spread, and it is only necessary to assume that healthy carriers of pneumococci intervene between one patient with pneumonia and another to understand how transference from person to person may occur.

An interesting and important feature of pneumonia is the frequency with which it is preceded by an acute respiratory infection. Inquiry of patients with pneumonia elicits the history of an acute upper tract infection, commonly ascribed to a "cold," an attack of so-called influenza, or a bronchitis in about fifteen per cent. of the cases, thus suggesting the importance of acute respiratory infection as a predisposing factor.

An important advance in the study of pneumonia has been made in Germany and in this country at the Hospital of the Rockefeller Institute for Medical Research¹ in distinguishing certain types of pneumococci as the infecting agents in the disease. Time does not permit a consideration of the manner in which the strains are differentiated. It is enough to say that there appear to be four types of pneumococci concerned in lobar pneumonia. Types I and II of the Rockefeller classification can be recognized by their agglutinative and immunologic reactions. Type III is distinguished by cultural and pathogenic properties. Type IV is a heterogen-

* Read before The Massachusetts Medical Society, June 9, 1915.

ous group without distinctive agglutinative or immunologic reactions. Of 145 cases of lobar pneumonia at the Rockefeller Hospital observed during 1912-13 and 1913-14,² organisms belonging to Types I, II and III were found in about 80% of the cases, Type IV comprising the remaining 20%. It is to be noted that the different strains show no tendency to change from one type to another under artificial conditions. The identification of these fixed strains is an important advance in the study of pneumonia, and at once affords a more exact comparison of types of pneumococci normally present in the mouth of healthy individuals with those concerned in the etiology of lobar pneumonia.

It has long been recognized that normal persons are carriers of pneumococci in about 50% of the cases. The pneumococci so commonly found in the mouths of healthy individuals, however, differ from the fixed strains most prevalent in lobar pneumonia. Whereas at the Rockefeller Institute about 80% of the pneumonia cases showed the presence of types of pneumococci which could be identified as belonging to groups I, II or III, in a study of 15 strains obtained from the saliva of normal persons not exposed to pneumonia, no organisms belonging to these same types could be found. In a study of 5 strains of pneumococci obtained from similar sources at the Massachusetts General Hospital³ no fixed strains were found. In an attempt to identify the types of pneumococci which occur in the saliva of persons in more or less intimate contact with patients with pneumonia I have investigated 25 persons closely associated as members of the family or nurses. Of this number the attempt to isolate pneumococci was successful in 11 cases, but in none of these did the pneumococci fall into groups I, II or III. In two instances I found organisms which agglutinated with Type I anti-pneumococcal serum, but the morphologic and cultural peculiarities of these two strains indicated that they were not to be regarded as pneumococci. In the remaining 12 cases the attempt to isolate pneumococci failed. Dochez and Avery,⁴ on the contrary, succeeded in isolating typical groups of pneumococci in a number of instances from the mouth sputum of healthy individuals intimately in contact with cases of lobar pneumonia, and in these cases the type always corresponded to that with which the case of pneumonia was infected.

It should be said concerning these observations that they are as yet too few for safe conclusions. They suggest, however, that the strains of pneumococci normally inhabiting the mouth in healthy individuals are less concerned in the etiology of pneumonia than has heretofore been believed. Pulmonary infection with pneumococci resulting in lobar pneumonia has usually been ascribed to increased virulence of mouth organisms or diminished resistance of the host, but now seems more likely to be due to contact with pneumonia patients or healthy carriers of fixed strains of pneumococci. It is probable that

the infective agent in pneumonia is more nearly restricted to the neighborhood of the patient with pneumonia than has been previously thought. In this respect pneumonia may be not unlike epidemic cerebrospinal meningitis, in which healthy carriers of Weichselbaum's meningococcus probably serve to spread the infection.

Measures directed toward the prevention of lobar pneumonia should take into consideration its seasonal incidence at a period when other acute respiratory infections are prevalent and the probable importance of such infections as a factor in the spread of disease producing types of pneumococci. The apparent mildness of its epidemic character should not be allowed to lead to any relaxation of vigilance to prevent transference of pneumococci from person to person. In consideration of the development of pneumococci only at body temperature and their short viability outside the body, contagion must be regarded as the method of spread. The recognition of certain fixed types of pneumococci as the most common cause of lobar pneumonia and the failure to find these same strains in normal persons other than those in intimate contact with pneumonia patients makes it probable that the infecting agent in pneumonia has a more restricted distribution than has been previously thought. More careful control of infected persons may, therefore, be expected to diminish the prevalence of the disease.

The protective value of inoculations with the pneumococcus in preventing subsequent infection of animals with otherwise lethal doses of the organism suggests the possibility of vaccination in man for the prevention of pneumonia. Whether this can be accomplished cannot yet be regarded as settled, but the method deserves an extended trial when in any community pneumonia is unusually prevalent. The experience among the miners on the Rand at the Premier Mine is promising. In 1912, among 17,009 inoculated, the death rate from pneumonia was 6.89 per thousand, while among 6,700 controls the death rate was 17.72 per thousand. It would be desirable in the face of an epidemic to use as a vaccine the strain of organisms giving rise to the infection.

The following recommendations briefly outline the measures which may be expected to diminish the incidence of pneumonia:—

1. Education of the public concerning the manner in which respiratory infections take place and the means of avoiding them.

2. Closer supervision of the acute respiratory infections, such as ordinary "colds," so-called influenza, bronchitis and sore throats, and isolation of the more severe types of these simpler infections when possible.

3. Closer supervision of patients with pneumonia by: (a) making pneumonia a reportable disease, (b) isolation of patients with pneumonia.

4. Avoidance of overcrowding and the regulation of housing conditions.
5. The diminution of dust in cities.
6. Immunization of those exposed in times of epidemics.

REFERENCES.

- ¹ Dochez and Gillespie: Jour. Am. Med. Assn., Sept. 6, 1913.
² Dochez and Avery: Jour. Exp. Med., Feb. 1, 1914.
³ I am indebted to Dr. Rufus Cole, Director of the Hospital of the Rockefeller Institute for Medical Research for the antipneumococcal serum with which the tests were made.
⁴ Dochez and Avery: Jour. Exp. Med., Feb. 1, 1915.

III.

INFANT MORTALITY.*

By JOHN LOVETT MORSE, A.M., M.D., BOSTON,

It is impossible in the few minutes at my disposal to give more than the briefest summary of the main points regarding the importance, causation and prevention of infant mortality. The importance of the subject is shown by the fact that, according to the census of 1910, approximately 265,000 babies in the first and 53,000 in the second year of life died in the United States in 1910, making a total of 318,000. It is hardly necessary to advance other figures. The seriousness of the subject is emphasized, however, when it is realized that a baby comes into the world with less chance to live a week than an old man of ninety, and less chance to live a year than a man of eighty.

The causes of death are shown approximately in the accompanying table:

CAUSES OF DEATH.

Prematurity, congenital debility, congenital defects and accidents of birth.....	25%	} 85%
Acute gastro-intestinal diseases.....	25%	
Diseases of nutrition.....	15%	} 40%
Acute respiratory diseases.....	20%	
Acute infectious diseases.....	3%	} 8%
Tuberculosis.....	2%	
Syphilis.....	1%	} 9%
Unclassified.....	9%	

It is evident from this table where the work must be done to diminish the present terrible rate of infant mortality.

It seems a self-evident fact that the etiology of a condition must be understood before measures can be taken intelligently for its prevention. This fact often seems to be forgotten, however, in the campaign against infant mortality. Prematurity and congenital debility are, for example, due chiefly to alcoholism or disease in the parents and to overwork and under-nutrition of the mother. The measures to be taken to remedy these conditions are obvious, but far-reaching. Among them are the abolition of alcoholism, the prevention and notification of venereal diseases, the regulation of the employment of pregnant women, the provision of proper food for pregnant women, prenatal care by public nurses and by prenatal clinics, and the provision of suitable hospitals for the

care of premature infants. Most of the injuries at birth are avoidable, and are the result of the neglect or incompetency of physicians and midwives. The remedies are the better education of physicians, the abolition or proper regulation of midwives and the establishment of free municipal clinics for the care of poor women in labor.

The diseases of nutrition and the acute gastrointestinal diseases are due primarily to bad feeding. In general, 85% of all infantile deaths are in the bottle-fed and 90% of the deaths from the diarrheal diseases are in the bottle-fed. The remedy is again obvious. Women must be taught to nurse their babies and measures taken to enable them to do so. Public aid must provide for the mothers so that they do not have to wean their babies to go to work. They must be fed and helped. This can only be done when there is compulsory birth notification, which is enforced.

The bottle-fed babies die because they are badly fed. They are badly fed because of the ignorance of mothers and doctors, the inability of the poor to get good milk and their inability to take care of it, if they get it. The remedies are again obvious. They are the better education of physicians in the matter of infant feeding, the education of the poor and ignorant classes by district nurses, milk stations and "consultations," the improvement of the milk supply in general, the provision of clean milk for babies by public and private charities and the provision of free ice in the summer.

Other causes of the acute diarrheal diseases are excessive heat, overcrowding, unhygienic surroundings and flies. The remedies are again obvious. Among them are the improvement of the living conditions of the poor, the provision of parks, piers and playgrounds and the suppression of flies.

The causes of the acute respiratory diseases are overcrowding, bad ventilation and debility from improper feeding. The remedies for these conditions have already been mentioned.

The other causes of infant mortality are relatively so unimportant that it is hardly worth while to take them up, except to say that tuberculosis in infancy is due either to direct contagion or to the milk from tuberculous cows. The remedies are again obvious. The babies of tuberculous parents must be separated from them. The public must be still further educated to the danger of the infection of infants by adults suffering from open tuberculosis. The sale of milk from tuberculous cows must be prohibited or, if this is not possible, all milk must be pasteurized.

It is evident from what has been said that the fundamental causes of infant mortality are poverty, ignorance and immorality. Poverty, ignorance and immorality are always with us and are unfortunately widespread. It is evident, therefore, that the problem of the diminution of the infant mortality is a very broad and com-

* Read before The Massachusetts Medical Society, June 9, 1915.

plex one. It is no simple matter to correct the morals of the public, to educate the ignorant and to relieve poverty. Much has been and is being done, however, to diminish the infant mortality and the results of this work are already evident in a decreasing death-rate, especially in our large cities. Much more must be done, nevertheless, than is now being done. To do it means the expenditure of much energy and money, especially of money. The money spent will, however, be well invested, because of the increase in the productive power of the community as the result of the number of lives saved. The campaign is too large a one to be properly carried out by private charity. It must, therefore, be undertaken and conducted by the public authorities, national, state and municipal.

IV.

THE CONTROL OF TYPHOID FEVER.*

BY MARK W. RICHARDSON, M.D., BOSTON.

TYPHOID fever is with us because typhoid bacilli get into our food and drink. Typhoid bacilli get into our food and drink because the stools, urines, or sputum of persons harboring typhoid bacilli are inadequately controlled. Not all persons, however, who ingest the typhoid bacilli contract typhoid fever. They are either naturally immune or have, through typhoid infection or through artificial inoculation, acquired specific immunity. The problem resolves itself, therefore, into two parts: First, a more strict control of typhoid excretions; and, secondly, an increase in the resistance of the community through typhoid inoculation.

TYPHOID INOCULATION.

The value of this procedure has been demonstrated beyond a doubt through military experience and the results obtained in training schools for nurses. The immunity acquired is not absolute in all cases. It persists for three years and probably longer. The inconvenience suffered by the individual is small. The necessary material is furnished free of charge by the State Department of Health. The practice should become universal because it will be long before typhoid excreta can be eliminated from our water and food supplies.

CONTROL OF WATER SUPPLIES.

The character of the water supplies in Massachusetts has improved enormously in the last forty or fifty years, and to this improvement, no doubt, is due the fact that the typhoid death rate in this state, which in 1870 was approximately 80 per 100,000 of the population, is now but 8 per 100,000. This improvement, however, is confined largely to the urban water supplies.

* Read before The Massachusetts Medical Society, June 9, 1915.

The water supplies of the farms, exposed as they are frequently to contamination from defective privies and barnyards, continue to be responsible for much typhoid fever, especially of the vacation type.

There should be undoubtedly much more close supervision over the country well, not only from the point of view of the inhabitants of the rural localities, but also from that of the summer visitor.

CONTROL OF FOOD-HANDLERS.

Another very important factor in the control of typhoid fever lies in an increasingly strict supervision of food-handlers. The dangers incident to an unclean cook have been well exemplified in the experience of the New York Health Department with Typhoid Mary. It is apparent, however, that efficient control can be obtained only after long years of effort and mainly along educational lines, for it is manifestly impossible to determine, even by frequent bacteriological examinations, all the individuals who may be excreting typhoid bacilli. An important beginning, however, can be made if Health Departments will undertake the examination and education of all typhoid convalescents. Urinary carriers of the convalescent type are practically constant and easily discovered. Fecal carriers are, unfortunately, intermittent and not so easily discovered. In my opinion, however, the urinary carriers are much more dangerous. All typhoid convalescents, and especially those having to do with food products, should be made the subject of special educational effort, for with knowledge and care these individual carriers can reduce their dangerous potentialities to a minimum.

It has been my fortune to examine many cooks, to see many hotel and club kitchens, to see the lavatories used by these cooks, and their methods of furnishing specimens of urine and, to me, the wonder is that we do not have more typhoid than we do.

There is on foot a strong movement looking to the periodic examination of food-handlers in order to further the elimination of communicable disease. Such examinations, if supplemented properly by educational work would undoubtedly have an important effect upon the transfer of infection through food products. The necessity for an adequate inspection of milk, its production and distribution, seems to me to lie largely in the elimination from the industry of those who are sick or have been sick with a communicable disease, through the proper care of excreta of such individuals.

The house fly and his relation to diarrheal diseases has been abundantly exploited. I believe that this exploitation has been somewhat overdone, but would, nevertheless, urge a continued active campaign against this common nuisance.

THE TYPHOID PATIENT.

All cases of undetermined continued fever should be reported immediately to the local board of health as possible cases of typhoid fever. In no other way can health departments take early and effective steps to control epidemics.

To clear up the diagnosis, the physician must then use all the aids furnished by city and state authorities, such as Widal outfits and bile outfits for the cultivation of the typhoid bacilli from blood, stools, urine, or sputum. All doubtful cases should be subjected to typhoid precautions. Typhoid patients are best treated in hospitals. In any event, those who care for patients should not also be concerned with food supplies.

All excretions should be treated with disinfectants, the best of which is heat as employed in steam-jacketed hoppers used in large hospitals or as generated through the decomposition of calcium oxide in the method of Linenthal and Jones. Chemical disinfection is best carried out by thorough mixing of the excreta with carbolic acid 5%, formalin 10%, milk of lime or chlorinated lime 6%. Disinfection should, furthermore, be extended to bath water, inasmuch as this can easily be contaminated with stools or urine. Internal disinfection through the use of hexamethylamine should be carried out in every case, five or ten grains of the drug being given three times daily throughout the disease. This drug has no effect probably upon the presence of the typhoid bacilli in the stools although it is excreted in the bile. As a urinary disinfectant, however, it is very effective and eliminates undoubtedly many of the urinary carriers. Incidentally, I believe it prevents the occurrence of intercurrent cystitis, orchitis, and epididymitis.

The typhoid bacilli are present but rarely, I believe, in the sputum. I have seen them but once and then during a complicating pneumonia. This undoubted occurrence, though uncommon, necessitates, however, the routine disinfection of all sputum. It requires, furthermore, that each typhoid patient should have his own dishes and other apparatus, and that they should be subjected to rigid supervision. The disinfection of typhoid excreta from a city point of view is required from another standpoint, in that many of our shell fish are grown or fattened in sewage-polluted waters. Such polluted waters, furthermore, are oftentimes used by the public for bathing purposes.

DISINFECTION OF PREMISES.

After the death or convalescence of a patient, the room or rooms in which the patient has been kept must be the subject of careful treatment. Gaseous disinfection of the premises, however, is neither necessary or advisable. Sufficient will be done if the rooms are treated with a maximum of fresh air and sunshine with the abundant application of soap and water and the maximum utilization of fire, steam, boiling water

and some chemical disinfectant, such as carbolic acid 5%.

Finally, perhaps the most important factor in the whole problem is that of unclean hands. We have seen that the typhoid carrier, through uncleanly habits, infects oftentimes the food supplies. Of similar importance are the unclean habits of the general population, which as a rule takes no care to wash the hands before partaking of food.

When we consider how many typhoid carriers are at large, how frequently they must contaminate objects of common contact, such as door-knobs, hand rails, etc., it cannot but be that the indirect transfer of infectious material to the hands of the general population is frequent.

Indeed, I believe that our most effective slogan for the immediate future must be *wash your hands before handling food, whether it be for yourself or for other people's use.*

V.

PREVENTABLE HEART DISEASE.*

By ROGER I. LEE, M.D., CAMBRIDGE, MASS.

THE discussion of preventable heart disease is inevitably the discussion of the etiology of heart disease. Dr. Richard C. Cabot¹ in an analysis of six hundred successive and unselected cases of heart disease found that he could group 93% of the 600 cases under four etiological headings. These headings were: (1) Rheumatic, that is, presumably streptococci, (2) Syphilitic, (3) Arteriosclerotic, (4) Nephritic. The largest group was the rheumatic or streptococci, which includes 278 cases, or a little over 46%. The next largest group was the nephritic group, 19%; the arteriosclerotic was 15%; the syphilitic 12%. It is evident that the so-called "rheumatic," that is the streptococci or infectious group, is the important group. It embraces nearly half of the cases. Streptococci heart disease has its origin in a large majority of cases (in 60% of Cabot's series) before the 22nd year. It begins young; it is essentially a chronic disease and if severe or progressive it handicaps those afflicted during the prime of life, and often kills before maturity. The prognosis of severe chronic endocarditis in childhood is notoriously grave. Surely it would seem that since it is possible by repeated adequate medical inspection to control the health of school children, it ought to be possible to eliminate much of this group and to minimize the after-effects of early slight cardiac lesions. Even on economic grounds a considerable number of people should not start their working years with a handicap which can never be removed, but which tends to increase.

During the past year opportunity presented to examine the entire freshman class of Harvard College. This group represented 662 young

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male adults of an average age of 18. The individuals were not selected but the group may be considered to be selected in so far as it is always a selected group as to parentage, social environment and intelligence that seeks an academic education. This group represents theoretically young men who have had the best medical advice. Actual invalids are naturally not to be expected in this group. Of these 662 students 13, or approximately 2%, had a definite lesion of one or more valves of the heart. There were two additional cases in which there was some question of valvular trouble. In 10 of the 13 cases the mitral valve was affected, in two of the cases the aortic valve, and in one both the mitral and aortic valves were affected. In every case the heart was perfectly compensated, and it might be assumed that if the lesion progressed no further there would be no serious handicap to moderate activity.

A study of the histories of these cases showed that five out of the thirteen, or 38%, gave a definite history of rheumatic fever; one case had had it twice. In one case the cardiac condition dated definitely back to the milk epidemic in 1911. He had tonsillitis and rheumatic fever at that time, and subsequently developed not only an endocarditis but persistent albuminuria. None of the other cases presented albuminuria. Eight of the cases gave a history of severe tonsillitis, two of the cases had had pneumonia. One youth had had both pneumonia and rheumatic fever. Another had scarlet fever at 11, pneumonia at 15, and three attacks of tonsillitis. His endocarditis might have originated from any one of these infections, or a combination of two or more. Four of the cases had had scarlet fever. Only one case gave a history of no more serious infection than chicken-pox, measles and whooping-cough. That case had had some operation on the tonsils at 10 but the tonsils were still present. Seven of the thirteen cases had had some operation on their tonsils. However, 43.5% of the whole group of 662 freshmen had had some operation on the nose or throat, so that the increased percentage of cases with valvular defects with tonsillectomy was hardly striking. One of the thirteen cases had obviously large tonsils, another had buried tonsils. Removal was advised in both cases.

In order to contrast the rheumatic history in the group with valvular defects, which showed a history of rheumatism in 38%, the histories of the other 649 cases were analyzed. Thirty-five of these presented a history which might be interpreted as rheumatic fever. The interpretation was very liberal and certainly included all the possible cases and probably a considerable number of cases that should not be so classified. This gives us a percentage of 5% in the group without valvular lesions as contrasted with 38% in the group with valvular lesions. Furthermore, there were two young men who gave a history of rheumatic fever and who had hearts that seemed enlarged according to clinical ex-

amination but without other signs of valvular disease. It seems not unlikely that these two students had a slight endocarditis. The importance of rheumatic fever, which has long been recognized as an important etiological factor in valvular heart disease, is thus confirmed. Rheumatic fever is not always associated with endocarditis. It is possible to have rheumatic fever without endocarditis and endocarditis without rheumatic fever. It is probably true that rheumatic fever, like endocarditis, is only one of the results when bacteria, usually of the streptococcus, pneumococcus group circulate in the blood. The initial disease which permits the entrance of the organisms may be scarlet fever, pneumonia, tonsillitis, or any other infection. The essential point of emphasis is that to prevent valvular disease of the heart it is important to prevent antecedent infections which result in endocarditis. In one case the method of infection was patent. The case was acquired during a milk epidemic and could have been prevented by the use of pasteurized milk. The method of infection of the other cases was not apparent. The tonsils seemed to be accused as the atrium of infection in the majority of cases on account of the history of previous tonsillitis. Pneumonia and scarlet fever were in other cases probably the immediate etiological factor. Therefore the prevention of all the acute infections, particularly those associated with tonsillitis and rheumatic fever, seems to be the preventive treatment of valvular disease of the heart.

In Dr. Cabot's classification syphilis of the heart caused 12% of his series. Syphilis is an infection and the emphasis must be laid not so much on the prevention of cardiac manifestations after syphilis as the prevention of syphilis itself. Granted the existence of syphilis in a given case, the importance of thorough treatment of that case, not only to prevent cardiac and other complications, but also to prevent the spread of syphilis is obvious.

Evidence is slowly accumulating, tending to demonstrate that arteriosclerosis is dependent in a large measure upon the toxins of certain infections. That arteriosclerosis is due to lead is undoubtedly, that it may be due to other similar poisons is possible, but at present the evidence points definitely that arteriosclerosis may well be due in the large majority of cases to the toxins of the various infections. To my mind the prevention of arteriosclerosis lies in the prevention of infections with their toxins and the prevention of the introduction of other poisons like lead, rather than in the modification of habits of living and diet. The importance of proper habits and diet in the treatment of arteriosclerotic disease is, however, well recognized.

In the nephritic group we are dealing again in the large majority of cases with the end result of an infection, working not directly on the heart, but on the kidneys and thus on the heart. How often does a nephritis date back to an

early scarlet fever? Even in the degenerative form of nephritis the infections play an important rôle in causation as they do in arteriosclerosis.

The introduction of new methods of precision, the polygraph, electrocardiograph, the Roentgen ray, the sphygmomanometer, the complement fixation test for syphilis have all contributed to a more accurate differentiation of cardiac disease. In consequence of this change of criteria, it is probably true that we have eliminated fully as much as we have added. For example, it is now possible to interpret many cardiac irregularities and to exclude them from actual cardiac disease. Tea, coffee and tobacco are the frequent causes of cardiac irregularity but not of cardiac disease. Many cases of the so-called cardiac disease, so diagnosed on account of irregularity, are now known to be only functional disturbances of rhythm and not cardiac disease. Another popular fallacy has been that participation in athletics caused cardiac disease. Dr. Cabot was unable to find any such case in his series of 600. Mackenzie² in England has protested against this fallacy and says he has never seen a case of "athletic heart." I have personally seen many cases of so-called athletic heart, but have failed to find them abnormal. I have recently studied the effect on the heart of rowing, and have failed to find evidence that prolonged participation in rowing for a period of ten years damages the normal heart.

CONCLUSIONS.

Most heart disease is due to an antecedent infection. The prevention of heart disease is the prevention of infection. While it is true that certain infections like the tonsillitis-rheumatic fever symptom-complex group and syphilis are particularly associated with cardiac disease, yet logically every infection may be regarded as a possible carrier of damage to the heart. There does not seem to be adequate appreciation of the possible sequelae of infections, particularly rheumatic fever. Continued supervision after infections is important in order that an early endocarditis may be detected and the resulting damage be minimized. At present the development of medical inspection and supervision of school children seems the next step.

The prevention of infections is an enormous problem, but must be faced. It is possible to control better scarlet fever and syphilis. It is possible to make milk supply reasonably safe, and it is possible to remove diseased tonsils. It is the fashion now to remove tonsils in as many school children as possible. It is still an open question as to the desirability of removing moderately large tonsils in the absence of history or evidence of disease processes in or connected with the tonsils. While further legislation may be of assistance, the true solution of this problem can be found in the proper appreciation by the public and the medical profession of the

danger of all acute infections. The avoidance of infection and the prevention of its spread is largely a matter of personal hygiene. The department of health can and does supply the necessary information. The utilization of this knowledge depends on the intelligent coöperation of physicians and the public.

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VI.

TUBERCULOSIS: THE POLICY OF THE STATE OF MASSACHUSETTS REGARDING TUBERCULOSIS.*

BY ARTHUR K. STONE, M.D., BOSTON.

IT has been repeatedly asserted, especially at legislative hearings at the State House, that Massachusetts has no policy regarding tuberculosis. This assertion has been made, not only by laymen and lawyers, but also by physicians who should have known better, and therefore I am going to take this opportunity to set before the members of the Massachusetts Medical Society the policy of the state, which has been developed by careful study and enacted into law by the legislature.

The first idea in the legislative mind in dealing with the tuberculosis question in Massachusetts was to provide a place where consumptives could be cared for, and Rutland was started, not as was intended, but as a sanatorium. Later the three new state hospitals were built, again with the expectation on the part of the petitioners and the legislature that they, too, for the most part would take care of the far advanced cases. But the pressure for beds for cases who hoped for cure was so great that they became filled with moderately early cases; and yet the demand for the care of the far advanced cases was just as insistent as before; nay, more insistent, for the people had to a large degree come to look for hospital care for their advanced cases, having been educated to the danger of contact with them. Massachusetts was already well in the forefront of states in the tuberculosis campaign, but there was steady pressure for more opportunities to care for the unfortunates.

Accordingly, the legislature of 1910 directed that a commission should study the needs of Massachusetts and report to the following legislature. This commission, headed by Drs. H. P. Walcott and A. T. Cabot, with Dr. R. I. Lee as secretary, went over the whole ground most thoroughly, and made various recommendations, which became embodied in a series of laws and amendments to existing laws enacted by the legislature of 1911. Briefly, the policy then established was as follows:—

It is the duty of the state to care for three classes of tuberculous patients: First, state wards, that is those persons by any chance un-

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der the authority of the state, either in its asylums or prisons, who are found to have tuberculosis; second, those persons of foreign birth who have no legal settlement in any municipality of the state; and third, those persons who are at such an early stage in the disease that they are best treated in accordance with the most approved sanatorium methods. It was recognized that in every way so far as possible, it was desirable to separate these early, incipient cases from all contact with advanced cases and to treat them intensively.

There still remained the great group of advanced cases to care for,—cases which must have protection and care; patients who are discouraged, who want to be near familiar scenes and friends, and yet who through advancing weakness are unable to care for themselves and thus become a consequent menace to those about them. It seemed desirable to take care of these patients as near their homes as possible, and the law requires that all cities shall provide for the care of its tuberculosis patients, either in a separate institution, or by arranging with a nearby city for such care; or several cities may unite in hospital construction. In addition, towns on request of the department of health, may be included in this act. This is a necessary provision as will be seen when one considers that we have a community of 40,000 people living under so-called town government.

In order to help the municipalities in their work of hospital construction, the state has guaranteed to subsidize each town or city by the payment of five dollars per week for each patient maintained in a hospital that has been approved by the Board of Trustees of Consumptive Hospitals; and in the last year Massachusetts paid out about \$129,000 for the care of such tuberculosis patients. A subsidy is practically given to all patients, for the state charges but four dollars per week for patients in the various sanatoria, while the actual cost to the state is about ten dollars per week.

Further to encourage people to go to the various hospitals, it is provided that persons in hospitals and sanatoria for tuberculosis, when they cannot pay themselves, their board is paid by the health department of the municipality in which they have legal residence, and they are not pauperized by receiving such aid.

That the patients may be found early, when the probability of cure is greatest, it has further been enacted into law that the cities and all towns of 10,000 inhabitants shall maintain a dispensary, which has been defined to include a suitable room, a doctor, and a dispensary nurse. Here people who fear the disease can go and be examined, and can receive advice and help in case of need. Here, too, can be referred the person leaving the sanatorium, so that the very necessary "follow-up" work can be carried out to the greatest advantage and the work of the sanatoria made more effective. The dispensary nurse and the school nurse may be combined in

some communities, and in all they should work in harmony so that cases of tuberculosis may be discovered in children through these two agencies, for it is the consensus of opinion at the present time, that many, if not the majority, of cases of tuberculosis receive their primary infection in childhood, breaking out later during the stress of work and modern life.

Thus Massachusetts has a very definite policy as regards tuberculosis, and one that I believe to be most excellent and one that, in general, we physicians should support enthusiastically.

It has been asked, Why should not the state care for all the cases of tuberculosis as it does for the insane? Would not the state hospitals be better run—less in politics—than municipal institutions? This has been the contention of the Fall River Chamber of Commerce, which has been the most severe critic of the state policy. The Board of Health and the Board of Trustees of Hospitals for Consumptives, as directed by the Legislature of 1912, and the Recess Committee of the Legislature of 1913, who again reviewed this ground most thoroughly, were not convinced that it was desirable to change the policy of the state, and recommended various amendments to the existing laws, which affected them in detail only.

The great importance of the care of the advanced tuberculosis patient in the municipal hospital is, to my mind, the educational argument. The advanced case is a menace to the community. He should be in a hospital, if possible, for his best care, and secondly for the protection of the community. The hospital should have attractive features which should appeal to both the patient and his friends. It should be easy of access, that the friends may be able to visit frequently and thus maintain an interest in the patient. They should feel a personal responsibility for the institution. The board by whom it is run, and the doctors connected with it, should have personal interest in the whole problem, and the citizens should have the details of the work and the need of it brought to their attention each year in the annual reports and budgets, which will show emphatically the frequency of this disease in the community; for it is only when a community is awake to the ravages of tuberculosis that there is any hope of eradicating the disease.

Then, too, it must be remembered that the township is the political unit of New England, and that towns and cities included in artificial boundaries have often very distinct individualities differing from those of an adjacent town or city. Hence, it is often hard to get coöperation between towns and cities, when to the casual observer there should be no reason why such towns or cities should not unite to advantage to build combination hospitals for their patients. In most cases, I am sure that the best results will be gained if the municipality faces its problem and builds a hospital which shall care for its own advanced cases.

Two rural communities have appreciated the needs of their people and have come forward and asked for special legislation to enable them to construct a tuberculosis hospital. This broad-mindedness was first exhibited by Hampshire County, which, containing only one city (Northampton), asked and received permission to build, and has built a hospital for the tuberculosis cases in its county. This group of towns had a population of about 63,000 persons. This year Barnstable County (the Cape Cod towns) was given permission to construct a hospital for tuberculosis and a hospital for contagious diseases; and Cape Cod has only about 30,000 inhabitants, scattered in small villages from Provincetown to the canal. Certainly these people should be an inspiration to other communities to look after the sufferers within their boundaries.

In a few instances it is a hardship for a small city to build a hospital which will be difficult to run economically. It is a recognized fact that an efficient hospital unit is about forty to fifty beds; below that number the overhead charges are too great for economy; and above that the general service soon has to be doubled to make for efficiency. In some instances, such problems may best be met by arranging a hospital for a group of towns combined with the city in question; and in other cases, by having two or more neighboring cities unite to build a hospital in common, or by having a contract made between the city building the hospital and its neighbors whereby they agree for a rental and a definite per patient cost to send their patients to the hospital. The city of Malden has expressed a willingness to accommodate in this manner one or two of her neighbors.

Here, however, comes difficulty in regard to municipal jealousy and distrust, and such combinations are going to be difficult to arrange; and if this idea of combination is to be carried out, some further legislation will have to be enacted, giving somebody (probably the Public Health Council) power to arbitrarily combine cities and towns into groups for the construction of hospitals for tuberculosis patients.

There is need of these hospitals at once. There are patients already for the beds. There are long waiting lists at all the state sanatoria. Patients not unfrequently pass from the incipient and early stage before they can be admitted to the institutions that are especially designed for the cure of the early case. These state sanatoria have done good work, but never the work which they are capable of doing, because they have not had the truly early case to deal with exclusively.

The reporting of cases of tuberculosis, which is a part of your duties as physicians, is not carried out as it should be. Recently, I was told by a physician in a city of about 35,000 inhabitants and having 25 doctors, that there were approximately 60 cases of tuberculosis reported in that city, of whom a quarter had been reported

by himself. He did not believe that he had that proportion of the tuberculosis work of the city. In too many towns and cities the reported cases are yet fewer than the number shown by the mortality statistics. This should not be; the town and city officials and the State Department of Health should know of the extent of the disease throughout the state. It is your duty to see that this law is carried out; and it is only when the extent of the problem is known that the laymen and city officials will be ready to meet this important problem.

Let every physician realize that Massachusetts has a state-wide policy regarding tuberculosis, that it has been carefully considered and devised to meet the needs of the political life of the state, and that this policy should be enthusiastically supported in its general lines, and that any amendment should be to meet certain specific difficulties rather than to consider any change in its general construction.

VII.

SYPHILIS.*

By ABNER POST, M.D., BOSTON.

As affecting the public health, syphilis must be considered as a great deal more than simply a venereal disease. It is a communicable disease, chronic, lasting many years, intermittent, disappearing for a time so completely as to simulate a cure, only to reappear later in some cases in more serious forms. (In fact, certain pessimists affirm that it is incurable.) It is infectious in its earlier stages. Later stages are hardly communicable at all. In fact, it was believed some years ago by many that its later or tertiary stages were never communicated. The continued existence of its microscopic entity in tertiary disease is now positively known, and, in consequence, the possibility of infection; but practically the cases of infection from tertiary disease are very rare.

From the standpoint of preventive medicine it is very necessary to distinguish between the dangerous cases and those practically harmless. If the recent infectious cases can be rendered innocuous the spread of the disease will be wonderfully diminished.

The knowledge that syphilis is largely venereal in its origin has led to the attachment of a stigma to all syphilitics. This has made the syphilitic resort to clandestine medication, to advertising doctors and advertised remedies. A curious mental condition in the community has led to the refusal of hospital relief to syphilitics. A feeling that syphilitics are unfit for Christian charity seems to be an underlying sentiment. In addition it has been considered that their condition was the result of their own acts, and their relation to the public health has been ignored. One of the results of this condition of public

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opinion has been its reaction on the medical profession. It is one of the diseases which students have very largely been allowed to pick up. In few medical schools has it been systematically taught. Although hospitals have refused to accept such cases, cases have crept in. They are admitted under false diagnoses, and in that manner they falsify the hospital reports. Rheumatism, tuberculosis and cancer are but some of the diagnoses under which syphilitics are admitted. Hospital reports of diseases treated have been greatly reduced in value by the failure to recognize the diagnosis of syphilis. A similar condition exists in private practice. It is a brave man who dares sign a death certificate giving syphilis as the cause of death. All sorts of evasions are resorted to, all of which tend to invalidate vital statistics. The vast number of cases in which the disease is discovered by the Wassermann reaction in the laboratory is strong evidence of neglect of clinical study.

Various remedies have been tried for the control of syphilis:—

1. Registration and license of women of the town is the one largely pursued in European countries. That system is based upon a wrong principle. It is believed by many to be a failure in practice. It is impossible of execution in this community.

2. Expatriation, or the driving out of that class of women who are supposed to have spread the disease, has been tried in various communities. No community can follow that method for any length of time. For to drive them from one place is only to drive them into another. It is also based upon the theory, which is erroneous, that one sex alone spreads the disease.

3. Compulsory registration is proposed and has been tried to some extent. It is too early for such a procedure. With present ideas it could only favor concealment and deceit on the part of doctors and patients alike, and recurrence to clandestine medication, to advertising doctors and advertised remedies.

In this community we have tried neglect and refusal to recognize even the existence of the disease. It has so flourished that it is no longer possible to ignore it. It demands our serious attention. If we can extinguish or control the fresh infections we can safely neglect the later cases, so far as danger to public health is concerned. It is certainly with fresh or infectious cases that we ought to concern ourselves. Fortunately these are the easiest cases to deal with. These cases are rendered harmless, for a time at least, by a single dose of 606—not necessarily forever harmless, nor are they always absolutely cured. But it certainly diminishes their danger wonderfully. A single visit with the immediate administration of 606 is worth a dozen visits otherwise treated with other treatment, so far as danger to the community is concerned. Unfortunately for the State, we compel these patients to pay for their own treatment. This they can-

not always do at a moment's notice. The treatment is postponed and the patient disappears untreated. The State ought to take advantage of the first visit by free and immediate treatment. It is a wonderful opportunity.

Salvarsan is not necessarily the best remedy possible. It will doubtless be supplanted by a drug more easily obtainable. But it has demonstrated the fact that the spread of syphilis is more easily controlled than was possible earlier. If this drug becomes unattainable, some other combination will undoubtedly take its place.

The laws at present on the statute books are sufficient for present control. They obligate cities and towns to care for such cases, and allow no hospital supported wholly or in part by taxation to discriminate against the disease unless by provision of a special hospital. They provide for the arrest and custody of anyone with a disease dangerous to the public health, under the law which permits the removal of any person who is a menace to the community.

Failure to provide medical care for the children who have inherited or acquired syphilis is construed by the courts as cruelty to children, under the physical neglect law.

The retention of all inmates of public institutions while they are a menace to public health is provided by law.

We do not need more laws, but the enforcement of existing laws. A change in public sentiment is already beginning.

The Massachusetts General Hospital has maintained for nearly two years a separate department for syphilitics, with large out-patient facilities and a few beds. The Boston City Hospital has practically done the same thing. The Children's Hospital has changed its policy and now treats children with syphilis. The Boston Dispensary has for many years paid considerable attention to these cases. Worcester has provided a hospital ward for their care. The Psychopathic Hospital has done very much to spread a knowledge of the disease in its cerebral manifestations, and while not called upon to take measures which shall prevent its spread, has been caring most watchfully for those cases which ought to be very largely prevented by such care of earlier cases as has been here recommended. The Massachusetts Medical Society devoted a forenoon to the subject last year. The New York State Medical Society at its last annual meeting instituted a separate section and devoted three days to the disease.

The Post Office has done much to protect credulous sufferers against unscrupulous advertisers, but no one of these agencies has gone so far as to consider it the duty of the town or state to make itself responsible for the curing of the patient. We are still inclined to regard the syphilitic from the viewpoint of the moralist rather than that of the pathologist. We still act as if the disease was communicated by immorality alone and its dangers were confined to the immoral.

From the standpoint of protective medicine and public health, the following matters would seem to be indicated for the present:—

To recognize syphilis as a communicable disease.

That it presents problems for the physician which should not be entirely given over to the eugenicist and the moralist.

That cases should be provided with hospital care.

That the best means available for treatment and cure of early cases should be provided by the community for such individuals as are unable or unwilling to provide it for themselves.

That the disease should be regarded as a subject worthy the most careful study of physicians and students.

These means would meet with no opposition. They would go far towards controlling the disease and prepare the way for more vigorous measures later.

VIII.

CONTAGIOUS DISEASES.*

By EUGENE R. KELLEY, M.D., BOSTON.

STUDIES upon contagious or communicable diseases and attempts to control them represent the oldest branch of preventive medicine. For all practical purposes, until quite recently, the consideration of "contagious diseases," "general sanitation," and "vital statistics" covered the entire field of preventive medicine. As the bacterial concept of communicable disease transmission became better established the prodigious amount of detailed, technical study and investigation, involved in both the laboratory and administrative side of preventive medicine, tended naturally and inevitably to create a group of specialists. From this it was a most natural development for the general public and the medical profession as well, to consider the whole question as one for the specialists to concern themselves with,—as one that did not affect them at all. Only today are we fully beginning to realize that if the old glib phrase, "contagious disease control" is ever going to be something more than a phrase—is ever going to become an index of fact rather than a figure of speech—we must change about radically and point out clearly and unmistakably to the people that the control of contagious diseases is impossible so long as it is considered a subject which concerns the hygienists and the medical profession alone.

The most encouraging thing about the subject of communicable diseases is the rapidity of the progress that has been made in the fight against them in the immediate past. It is not putting it too strongly to say that until the past half-century mankind made little intelligent advance in the problem of contagious disease control. While

several significant discoveries and advances, one epoch-making, were made during centuries of observation, the true nature of the cause of contagion was still wrapped in impenetrable mystery. Without this fundamental knowledge, all deduction, all epidemiological observation, all the intellectual forces of mankind went hopelessly astray when brought to bear upon the problem. Since the discovery of the bacterial concept of disease by Pasteur, however, real solid advance has been most rapid. For example, in this country since 1880, the first year in which figures for any portion of the United States outside of Massachusetts became available, and the year in which the United States Registration Area was established, the mortality for that portion of the United States admitted to this area from certain prominent communicable diseases has dropped as follows:—

Typhoid	50%
Scarlet fever	89%
Diphtheria	84%
Tuberculosis	54%

For the beginnings of scientific disease prevention in America, it has come about that the Massachusetts Medical Society can claim the eternal credit of having been responsible in no small measure through the individual studies and profound foresight of certain of its members and the enlightened stand taken by it as a corporate body.

The question that most concerns us now is—Where does Massachusetts stand in the question of communicable disease control today—what further reductions in the prevalence of these diseases can reasonably be expected of the future—and how can such reductions be brought about?

The achievements of this state in the past twenty years are most striking. The reduction in the main has been steady and consistent; and the bare figures speak louder for themselves than any embellishment can ever do. The fatality rate from typhoid fever has been reduced nearly 75% in twenty years, and the actual typhoid fatalities from 680 typhoid deaths in 1895 to 234 deaths in 1914; the fatality rate from diphtheria has been reduced over 80%, and the actual diphtheria fatalities from 1784 in 1895 to 601 in 1914; the fatality rate from consumption has been reduced nearly 50%, and the actual consumption deaths from 5486 in 1895 to 3362 in 1914. These facts are an enduring monument to solid achievement in true preventive medicine. The cold statistics serve to call up to the imagination of hygienists and physicians the hundreds now living that without this advance would be in cemeteries—the thousands now in the joy of health and strength that otherwise would have suffered from these scourges.

But when we come to certain other common contagious diseases, we do not find the record either so clear or so satisfactory. Scarlet fever,

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while showing on the whole a reduction, is so variable in its frequency and fatality that we cannot make any such confident assertions as we can for those diseases mentioned above. Measles and whooping cough, those diseases considered so negligible by many of our fellow citizens, but known by us to be so serious, show no reductions that are not followed by periods of corresponding increases, the measles fatality rate for the last year of our twenty-year period being almost exactly twice the rate for the initial year of that period. To these we may add those other great variables of epidemiology, infantile paralysis and cerebrospinal meningitis. It is evident that there still remains something to be done in the control of communicable diseases.

Neither can Massachusetts claim any marked superiority over the other states in the degree of completeness of contagious disease diminution, except in the matter of typhoid reduction. The practising physicians in Massachusetts reported last year (1914) 7144 cases of pulmonary tuberculosis, 2333 of typhoid, 11,057 of scarlet fever, 12,264 of measles, 3316 of whooping cough, and 8080 of diphtheria. These facts are enough to indicate that the control of contagious diseases is still a problem worthy of our most serious consideration. Can we solve it?

Within the assigned limits of this paper, we can only consider in barest outline the means which we can look to in our attempt to reduce communicable disease prevalence:—

1. First of all must come a better education of the general public, particularly parents and educators, as to the real nature of contagious disease transmission. To a great extent the public mind is still focused on environment rather than upon living beings, whether human, animal or insect, or, in short on the inanimate rather than the animate world, as the prominent factor in communicable disease transmission. To prove this point, we need only note the blind reliance the general public still place in fumigation and the slowness with which they grasp the conception of direct disease transmission through the naso-pharyngeal or alvine discharges.

2. We must have more efficient diagnoses. Improvement here has been consistent, I believe, although perhaps slow. A wider and prompt use of the diagnostic laboratory is one great aid that the physicians of this State should have more readily accessible in many portions of the State than is the case at present. But it cannot be said that the facilities of the present laboratory systems are utilized to the extent they might well be. Take diphtheria, for example. If any clinical fact is now well established, it is that there is no specific clinical picture of a beginning diphtheria. The physician should try out by culture any suspicious throat, particularly if diphtheria is known to be present, and not wait until the clinical picture is typical and then send a culture. Nor should a single laboratory negative in suspected diphtheria, tuberculosis, or

typhoid cause the physician to relax his clinical vigilance. The fact that a single laboratory report is negative is no better evidence that the disease is not present than the fact that we fail to catch any fish in a given stream on a given day is evidence that the stream contains no fish.

3. Another factor of great importance is prompt reporting to the authorities, so that they may investigate and assume control as early as possible. Every single case of contagious disease can be regarded in only one light, viz: as a potential focus for an epidemic. It is a fact worthy of record that the physicians of Massachusetts today report a higher proportion of cases when compared with the mortality figures than probably any other state in the Union.

4. Following the reporting comes logically efficient isolation—efficient isolation is at its best in hospitalization. The need of hospitalization varies with many factors. Of all our contagious diseases it is most urgent in the case of tuberculosis because of the chronicity of the disease and the insidiousness of infection. It becomes less necessary as we go up the social scale and as the density of population decreases, for obvious reasons,—but whether our isolation be at home or in a hospital, the modern tendency is strongly away from "shot gun" quarantine policy, and towards an enlightened contagious disease "asepsis" for the sick room, leaving those who do not come into direct contact with the patient a much greater freedom.

Other means of contagious disease control which deserve consideration at length, but which we will only mention, are:—

- (a) Hygienic supervision of schools.
- (b) The use of specific sera for cure, detection and prevention.
- (c) Protection of food supplies.
- (d) Venereal prophylaxis.

This in brief is the program we must follow to achieve our aim. The part played by the medical profession must continue to be, as in the past, one of unselfish curtailment of certain sources of their own revenue; and in addition one of much greater utilization of their teaching capacity in their dealings with the public, and of support for the public health administrators in their oftentimes disagreeable duties.

If we can do this I feel that it is not unreasonable to predict at least a 10% further reduction of tuberculosis frequency and fatality in the next ten years; at least 50% diphtheria decrease; as much typhoid and epidemic cerebrospinal meningitis decrease; a substantial, although I will not venture to predict how great, reduction for measles, scarlet fever and whooping cough; and a hope that we may be able to do something more satisfactory than we have hitherto done against infantile paralysis.

Original Article.

SPOTTED FEVER OF THE ROCKY MOUNTAINS.

By G. F. POPE, M.D., WINNEMUCCA, NEVADA.

1. *Etiology.* Geographical distribution: For about thirty years this disease has been known in the Valley of the Bitter Root River, situated in Western Montana. A few cases have also been observed in other parts of that state. In Idaho the disease has been pretty generally found at different times, especially in the southern part of the state, along the Snake River and its tributaries. In Nevada, the Quinn River country, Buffalo Valley and along the Humboldt we find it pretty generally distributed. Also in parts of Eastern Oregon it is found in a mild form.

2. *Season.* It is a disease of springtime and early summer, as early as the middle of March and as late as the first of August. It is never seen at other times of the year, and it seems to come with the ticks and go with the ticks.

3. *Climate.* The disease does not prevail south of 40° latitude or north of 47° latitude, and seems to be prevalent in elevation of about three to five thousand feet above sea level.

4. *Occupation.* It infects individuals whose occupation takes them into the open sage brush country, such as stock men, common sheep herders, miners, prospectors, lumbermen, and those who are exposed to the bite of the tick.

5. *Age.* I have seen it in a child of five and in a man of sixty-four.

6. *Sex.* In fifteen cases, five were females and ten males.

7. *Blood Examination.* One hundred and fifty blood smears in fifteen cases have been studied and no parasite has been found; in each case Jenner's or Wright's modification of Jenner's stain has been used. This would seem to disprove the findings of Wilson and Chowning; and Anderson's work at Mazula, Montana, which verified Wilson and Chowning's discovery of a parasite in the blood, was disproved by Styles and Ricketts.

8. *Method of Infection.* On investigation it is found that all the patients had been bitten by ticks, some of them many times, and that the disease comes as the ticks come in the spring and disappears when they leave in late summer. As to intermediate host, it is generally believed among old ranch men that sheep are the most common hosts and that there never was a case of spotted fever before the advent of the sheep industry into these mountain states. This would seem to be carried out by experience. But Ricketts has very satisfactorily proven that many other animals may act as intermediate host in this disease,—the ground squirrel, cattle, horses, rabbits, and indeed any of the animals which

rove these great ranges. The first case in the state of Nevada occurred in the year 1874, and was thought at first to be a case of smallpox. I must, of course, refer to those most valuable experiments of the late Dr. Ricketts of Chicago—inoculation experiments, which proved that immunity was established by the artificial production of spotted fever in guinea-pigs. This experimental work, I was unable to carry out. From the examination of a number of ticks found in the neighborhood of cases of spotted fever, I have found the most prevalent form to be *Dermacentor Venustus* of the classification of the Bureau of Entomology of the United States Department of Agriculture.

9. *Symptoms. Incubation:* This is from three to ten days, usually seven. There may be a few days of general malaise, with chilly sensations, nausea or a distinct chill, and the patient takes to bed. Generally there is pain in the back and all the muscles and bones feel sore. Or the symptoms may be much exaggerated and the limbs feel as if in a vise; bowels are always very constipated throughout the disease; tongue heavily coated, with red edge and tip; conjunctivae congested, becoming yellow; urine small in amount, of high specific gravity, with albumen and sometimes casts; little bronchitis after a few days and nose bleed is present in all cases.

Fever. Before the distinct chill there is a little or no fever in the morning, but a slight rise of temperature in the afternoon. Then the course of the fever is just like an ordinary typhoid, with gradual rise in the evening, and morning remission. The maximum is usually reached on the tenth to the twelfth day; then gradually falls to normal, in favorable cases, on the fifteenth or eighteenth day. The temperature may get as high as 104 or 105, with slight morning remissions.

Circulatory System. The pulse is that of an average typhoid, and blood pressure in one well nourished adult of twenty-five after the first week dropped to ninety and stayed there for two weeks. Blood examination showed a progressive decrease in the red cells, with increase in the number of white cells from 15,500 to 17,000. A differential count made in three cases showed an average as follows:—

Polymorphonuclear leucocytes	80.2
Large mononuclear leucocytes	10.0
Small lymph leucocytes	9.0
Eosinophiles8

100.00

Widal's reaction negative in fifteen cases examined.

Eruption. The eruption usually appears on the third or fourth day of the disease and is seen first on the wrists and ankles, then on the soft palate and uvula, then on the legs, arms, forehead, back, chest and abdomen,—on the abdomen least abundant, but literally covering

other parts of the body. The spots at first are of a reddish salmon color, macular at all times, and about the size of a split pea. At first they disappear readily on pressure and come back to their original color quickly; after a time they become darker and darker, until they are of a distinct purple. By the tenth day of the disease they fail to disappear on pressure and are petechial in character. In about fourteen days they begin to lose their petechial character and disappear slowly on pressure. When the fever begins to go the eruption begins to fade, but a return of fever, free perspiration or exposure to a cool breeze will bring out these purplish spots again. This peculiarity may last for weeks or even months after convalescence. The skin may be quite fair, but a slight perspiration with sudden exposure to a cool breeze will bring out the purple spots at the site of the old eruption. I never have seen any well defined desquamation after the disease, but this may be due to the fact that I use boric acid, sponging constantly through the febrile period. In neglected cases when nutrition is poor and bathing is not well carried out, we may have necrosis of the skin over the different points of pressure, and in other cases a sloughing of the soft palate. The skin is always jaundiced, the conjunctiva congested and yellow.

Digestive System. There is white coating of the tongue with red edge and tip, later sordes on the teeth and lips. Appetite is fair during the first week, but nausea may be a marked symptom and last to the end. Constipation is always present and is very marked. Some tympanites is usually seen. The spleen becomes enlarged early and may extend two inches below the costal margin.

Urinary System. The urine is reduced to about half the normal amount in twenty-four hours, with little albumen and casts.

Respiratory System. There is always a little bronchitis, and lobar pneumonia is a frequent complication. Epistaxis is seen in the first days.

Nervous System. Pain in the back and head is marked during the first week of the disease. Patients change position frequently because of the soreness in muscles and bones. The mind is usually clear, even in the severest cases and the pupils react normally.

10. **Treatment.** The treatment is purely symptomatic. It consists in the use of high enemata, when necessary to keep the bowels free. Feeding should be in the form of large quantities of easily digested food, peptonized milk, chicken broth, toast, eggs in any form and ice cream. I have been using a liberal diet as follows: for breakfast, at 6 A.M., farina, one portion with lactose, one and one-half ounces and cream, one and one-half ounces; bread and butter, two ounces without crust, one egg, coffee, five ounces, with cream, one and one-half ounces, and lactose one ounce. Eight o'clock, hot milk, six ounces, with cream, one and one-half ounces, and lactose,

one ounce, bread and butter, two ounces. Dinner at twelve, broth 8 ounces, bread and butter in form of milk toast, two ounces, with milk, six ounces and cream one and one-half ounces, lactose one ounce, eggs poached, two; rice, one portion with cream, one and one-half ounces, lactose, one and one-half ounces; 2 P. M., ice cream one portion, bread and butter two ounces, milk six ounces with cream one and one-half ounces. Supper at 6 P.M., wheat breakfast food, one portion, with cream one and one-half ounces, lactose one and one-half ounces, bread and butter two ounces, cocoa, two cups with cream; 8 P.M., orange albumen, made from the white of two eggs and one-half ounce of lactose.

Tepid sponge baths of saturated solution of boric acid are continued throughout the disease every six hours as long as the temperature is over 102. Mouth and teeth receive careful attention by the use of tooth brush and gargling with liquor antisepticus, U. S. P., every six hours. Internally I have found quinine to be useless if not harmful and I have contented myself with the use of five grains of salol every six hours. The boric acid tepid bath, as in small-pox, seems to lessen the congestion of the skin and favor the course of the disease, at least I have thought that it did and I know that patients derive much comfort from this form of treatment. Undoubtedly the future will bring to us some form of vaccine treatment which may be of distinct service in a disease having the etiology of spotted fever.

Medical Progress.

PROGRESS IN GYNECOLOGY.

By STEPHEN RUSHMORE, M.D., BOSTON.

MENSTRUATION.

In the investigation of pathological uterine bleeding, a point of view to which, in general, little attention is paid, according to Novak,¹ is that which looks first for the cause of normal uterine bleeding or menstruation. This is especially of importance in cases where no obvious anatomical basis is found, for in normal menstruation there is no evident cause for the escape of blood into the uterine cavity. Neither the changes in the structure of the endometrium, as hyperplasia, nor changes in the muscle, as in the so-called uterine insufficiency, nor in the blood vessels, as in arteriosclerosis, will throw light on the group of cases which is to be explained.

On account of recent studies of internal secretion and the various organs which somewhat definitely contribute this element to the body economy, the following theoretical explanation of menstruation may be formulated:—

1. There is first some underlying cause (or causes).

2. There is a nervous mechanism, essentially vasomotor in nature, determining pelvic congestion, and

3. There is, the terminal mechanism, the uterus and especially the endometrium.

The causes of uterine bleeding may, therefore, be divided into three groups:—

1. Fundamental, including disturbances of internal secretion of the ovary or of some other gland;

2. Nervous causes exerting influence through the vaso-motor system; and

3. Anatomic causes, affecting structural changes in the pelvic organs, blood vessels or even the blood itself. It is the first and second group that Novak discusses.

In the study of the fundamental causes of menstruation, one is confronted at the outset by an enormous literature containing few facts. This means that so far, difficulty has been experienced in studying the ovarian function. Certain changes clearly follow removal of the ovary or cessation of its function. But increased ovarian function cannot be produced, nor is it recognizable in its manifestations. Recently the problem has been attacked by Adler from the point of view of the sympathetic nervous system. Here two functions are evident, called after the analogy of the nervous mechanism of the heart, sympathicotrophic, referring to the accelerator action on the heart, and vagotropic or inhibitory.

Certain chemical substances, including hormones, exhibit a special influence on one or the other of these two systems. Epinephrin is an example of the sympathicotrophic group, pilocarpin of the vagotropic. Adler has found in some cases of "ovarian insufficiency" as at the menopause, heightened susceptibility to small doses of epinephrin; and in some cases of uterine bleeding, a heightened susceptibility to pilocarpin. A certain amount of confirmation has been given by Novak from cases of his own. The conclusion that ovarian hyperfunction is the cause of the bleeding in these cases is only suggested, not proved, for the complete mechanism is so very complicated. Experimental work also has suggested rather than proved the presence of other factors in the cause of uterine bleeding, as changes in the coagulability of the blood when it reaches the uterus, the effect of other glands of internal secretion, and finally, the effect of the "nervous" causes, which includes impulses from the higher centers. Although in the case of menstruation there is no evidence of volitional control, yet psychic factors may play a part, as is well known clinically.

Blair Bell² has made a chemical study of the menstrual blood in two series of cases, in order to determine the presence of fibrin ferment and of fibrinogen. In the first series of cases the menstrual blood did not clot; in the second, clotting was present. He found in the former

series neither fibrin ferment nor fibrinogen in any case. In the latter cases fibrin ferment was nearly always present; fibrinogen only a few times. He concludes, therefore, that it is the presence of the fibrin ferment that determines the clotting, and if this is absent clotting will not take place. But his search for the cause of the disappearance of the fibrin ferment has so far been in vain, though he says that it or its precursor is removed or destroyed by some vital process in the cells of the endometrium.

In the Hunterian Lecture by H. Beckwith Whitehouse,³ he has presented a study of menstruation which deserves careful attention. It is comprehensive and as detailed as the limitations of such a lecture would permit. It represents a contribution to our knowledge of the physiology and pathology of hemorrhage from the uterus. The non-coagulability of the menstrual blood represents the chief points investigated by Whitehouse himself. Normally the blood may clot in the uterus but a fibrolysin is apparently present in the fluid of the menstrual blood, not, however, capable of resolving an unlimited amount of thrombus. It is thought by Whitehouse to be secreted by the glands of the uterus. The tissues of the endometrium contain, on the other hand, thrombokinase. The balance between these two factors is upset in the functional hemorrhages of puberty and of the menopause. In normal women it is easily disturbed, as is shown by the fact that in about half the cases investigated small clots were found in the menstrual blood though it did not clot. The original lecture should be consulted for the details of the experimental work which constitutes the basis of Whitehouse's contribution, presented in an interesting and scholarly manner.

DYSMENORRHEA.

Doederlein⁴ presents a good resumé of the various views on this subject which have been advanced by different investigators. While in a general way it is clear what is meant by the term clinically, the cause of the symptom and its significance are obscure. There is often gradual onset, with colicky pain and headache, nausea and vomiting. Between periods the patient is usually perfectly comfortable, though occasionally "mittelschmerz" occurs, of unknown significance. There is sensitiveness of the inside of the uterus, especially the internal os, and in the menstrual discharge may be found some of the cast off endometrium, according to Doederlein's statement. No satisfactory explanation of the cases is forthcoming, yet the increasing prevalence of the disease in America suggests as an etiological factor defective sexual hygiene, in the matter of regard for the physiological disabilities and weaknesses of girls in the critical period of development. The psychoneurotic factor is receiving more attention as a possible explanation, while local physical changes seem of less importance. Prophylaxis involves

sociological problems difficult of solution. Curative treatment should be both general and local. Hygiene, diet, tonics, rest, should be supplemented by opotherapy. Dilatation of the cervix, the use of stem pessaries and systematic sounding of the uterus have proved efficacious. Perhaps the favorable results here are due to dulling the sensitiveness of the uterine mucosa. During the attack applications of heat, sitz baths and hot douches with drugs (hydrastis, viburnum and opiates) to relieve the severe pain of uterine contractions are useful. In a number of cases latent tuberculosis has been discovered, and this possibility should always be kept in mind, whether the patient be of the robust or of the anemic type.

X-RAY IN THE TREATMENT OF MYOMATA.

The question of whether surgery can be eliminated in the treatment of myomata of the uterus is discussed at some length by McGlinn.¹ On account of the growing, and, as it seemed to him, mistaken tendency to treat myomata by the x-ray, he wrote to a number of surgeons and roentgenologists in this country, asking their opinion on various phases of the subject. The replies, confirming in general McGlinn's opinion, form the basis of his article.

Reports favorable to the x-ray are due to failure to take into account the high percentage of cures by operation; practically all cases are cured that recover from the operation. The low initial mortality of the x-ray treatment must be counterbalanced by late failures. Besides, it is exactly those cases with complications, which chiefly give the operative mortality, that are deemed unsuitable for treatment with the x-ray. Other elements to be considered are the dangers from the x-ray, which are not limited to simple dermatitis; the inability to determine whether a given case is suitable for x-ray, as complications often cannot be made out clearly before operation; and the possibility of malignant change. Operation, with myomectomy as an alternative to hysterectomy, in certain cases of young women who desire children is more conservative.

On the other hand, there is no doubt that roentgenotherapy has controlled bleeding and in a certain number of cases has reduced the size of the tumor. Yet it can actually take the place of surgery in only a small proportion of cases. Its special field is those cases which are poor surgical risks, or in which operation is refused. If anemia alone is the contraindication to operation, x-ray may be used to check bleeding until the patient can be suitably prepared for operation.

RADIUM THERAPY.

The cases of uterine hemorrhage reported by Kelly and Burnam² fall into three groups.

- 1 Metropathies (myopathia hemorrhagica),
- 2 Metrorrhagia in the young (soon after puberty), and

3 Polypoid endometrium.

Myomata of the uterus, in some of which no hemorrhage had occurred, were also treated. The interesting results obtained are worthy of notice: the hemorrhages generally ceased and the tumors disappeared or diminished in size. The preferred method of application is intra-uterine as it is more efficacious and less likely to produce complications. Just how valuable this addition to the armamentarium of the gynecologist is, it is impossible to say as yet. Perhaps not as important as the authors say, for their claim that it is "perfectly suited to secure the disappearance of fibroid tumors" is vitiated by the fact that one case, in which the uterus was only ten centimeters in diameter, had to be subjected to radical operation. That is, one in a series of 21 cases. But we have, at any rate, a method that may prove of great value, and in the hands of those who can obtain the radium and are competent to use it, should be more widely tested before resort is had to operation.

PROLAPSE OF THE UTERUS.

The multiplicity of operations for prolapse of the uterus indicates that no single operation has been found which is always satisfactory; and when the variety of anatomical conditions is considered it is not to be expected that one method of procedure will suffice. Lenormant and Petit-Dutaillis³ describe an operation which is suitable for a certain number of cases. It is completed by a colpo-perineorrhaphy which exhibits no new feature. The treatment of the cervix and the anterior vaginal wall is the characteristic element. The operation consists of an extensive quadrilateral resection of the anterior vaginal wall, in fact, nearly one-half of the entire circumference of the vagina, and a high amputation of the cervix. It is, therefore, applicable only to those cases in which there is incomplete prolapse of the uterus, with hypertrophy of the cervix. The prolapse is cured by amputating somewhat more of the cervix than projects from the vulva and building up the perineum to give additional support to the stump of the uterus which is left. No effort is made to support the uterus from above. It is suitable, therefore, only in those cases in which an abdominal operation is inadvisable or refused and the body of the uterus still remains in the pelvis.

Guthrie and Whiteis⁴ describe a simple method for curing prolapse of the uterus, whether complete or incomplete, which presents the disadvantage, however, that the possibility of future pregnancy must be removed. The principle is to supply a large surface over which support is afforded to the uterus by suturing the body of the uterus into the abdominal wall between the recti or outside of them. The operation is usually attributed to Kocher and in its application the authors vary some of the details. While such an operation may fix the fundus perma-

nently, and in some cases also cure cystocele and rectocele, the general experience would point to the necessity of accessory operations below to support the bladder and rectum more firmly than can be done by a lifting process from above.

As a result of Nyulasy's⁹ experience, he holds that the chief structures supporting the uterus are its ligaments, principally the cardinal ligaments, and that the pelvic floor is of secondary importance. He has devised an operation in accordance with this view, for the cure of prolapse of the uterus, which has, in a general way, the same effect as an operation advocated by Dudley some years ago, though the operative procedures are different. In each case it is by bringing the base of the broad ligament, the cardinal ligament, forward on the cervix, that the support is obtained. Nyulasy opens the abdomen, frees the bladder from the uterus, dissects out the cardinal ligaments, making sure of the position of the ureters, and sutures each ligament to the cervix anteriorly by a silk thread. In his diagram he shows a single suture of silk catching both ligaments and a bit of the cervix. The round and utero-sacral ligaments are also shortened.

The advantages are (1) practical absence of hemorrhage, (2) the excellent immediate anatomical and almost certain good permanent results, (3) comparative absence of post-operative shock, and (4) the absence of raw areas as the incision between uterus and bladder is closed by a running suture of catgut.

RETRODISPLACEMENT OF THE UTERUS.

Byford¹⁰ says the operation which anatomically has proved most satisfactory in bringing the fundus forward in cases of retrodisplacements of the uterus is that known as the Alexander. In certain cases it needs to be supplemented by other procedures as shortening the utero-sacral ligaments or the use of a pessary for a short time following operation. But it is least likely to do harm and give rise to complications later. The objection to it, and formerly this was its greatest recommendation, is that the peritoneal cavity is not opened and thus intraperitoneal complications cannot be dealt with, or sometimes even discovered. Byford has sometimes employed it even after making a median incision on account of such complications. But the operation he suggests makes the usual lateral incisions unnecessary. The important steps are first to make a loop of the intraperitoneal portion of the round ligament distal to a point about three centimeters from the uterine cornu. By suturing the sides of the loop together a double cord is made. The peritoneum is separated from the abdominal wall from the median incision to the internal ring, at which point it is punctured from without inward. Through this puncture the loop of round ligament is drawn and then sutured by a perma-

nent suture to the under surface of the abdominal wall, about one centimeter from the ring. The technic is simple and easy, the immediate effect is good and the intraperitoneal effect is practically as after an Alexander operation.

According to Reynolds¹¹ in many cases of retroversion of the uterus, the cervix not only lies closer to the symphysis than is normal, but either it cannot be displaced backward, or if it is so displaced by considerable force, it immediately springs forward when the traction or pressure is released. There is present what seems to be a shortening of the anterior vaginal wall, but the displacement forward of the cervix is due, not to the anterior vaginal wall, a soft yielding tissue, but to the underlying connective tissue and fascia, the Y ligament of Goffe. The retrodisplacement of the fundus in these cases has taken place because at the time of menstrual congestion the uterus tends to become straight, due to a simple hydrostatic law. If, then, there is relaxation of the round ligaments, or if the straightening is sufficient to push the fundus to the point where intra-abdominal pressure is exerted on its anterior wall, the fundus goes into retroversion.

The treatment of the fascia which fixes the cervix forward is the point of Reynolds' contention. He recommends a transverse incision in the vagina just anterior to the cervix, going deeply enough to completely sever the fascia. The incision is closed in a direction parallel to the long axis of the vagina. This lengthens the anterior wall of the vagina but the crucial point is the severing of the fascia. If this is done the cervix easily goes back in the pelvis and the operative procedure can be completed by any of the ordinary methods of suspending the uterus.

URINARY INCONTINENCE.

Kelly and Dunn¹² discuss urinary incontinence in women without manifest injury to the bladder, give a description of various operations noted in the literature, report a series of cases from Dr. Kelly's clinic and describe an operation which has given good results. The object of the operation is to narrow the opening of the bladder into the urethra, for often, and generally, it is the sphincteric action which is feeble. An oval denudation, four by three centimeters, is made in the vaginal mucous membrane over the neck of the bladder. The exact position of the internal sphincter is determined by introducing a Pezzer or mushroom catheter into the bladder and making traction until it impinges firmly on the bladder wall at the opening of the urethra. It can be easily felt through the wall of the bladder after the denudation has been made. At this point the tissue on each side of the median line is grasped by two or three mattress sutures of silk or linen thread and approximated under the urethra. The closure is made with a continuous suture of fine catgut. The operation in Kelly's hands has

given complete control in a large percentage of cases, and may be performed under local anesthesia if indicated.

UTERINE ENDOSCOPY.

The desirability of seeing the inside of the uterus has many times appealed to the gynecologist, for other methods of investigation so often leave the operator in doubt as to whether a hysterectomy is or is not indicated. Bimanual examination, the uterine sound, digital examination (rarely possible) leave much to be desired. Heineberg¹³ describes a uterine endoscope which consists of (1) endoscopic tube, (2) irrigating attachment, (3) obturator, and (4) lighting attachment, and presents a preliminary report of a few cases which he has examined. The normal findings are given and the technic described. Dilatation of the cervix to 46 French is necessary for satisfactory introduction of the endoscope. In the presence of pregnancy or acute inflammation the procedure is contra-indicated. General anesthesia is necessary on account of the dilatation of the cervix, but perhaps local anesthesia can be made to suffice. While its use as a routine is not likely to be of much value, there are certain cases in which it might be a very valuable adjunct in diagnosis.

LEUCORRHEA.

Curtis¹⁴ has carried out a thorough study of a series of cases of chronic leucorrhea making bacteriological examinations and employing various methods of treatment. In non-parous women, purulent discharge is rare apart from gonococcus infection. In parous women additional factors play a part, as infections associated with pregnancy, altered anatomical relations acting as a predisposing factor, and increased secretion of mucus. Purulent discharges come chiefly from the lower portion of the tract and rarely from the body of the uterus. In virgins the vagina contains few bacteria except the large Gram-positive vaginal bacillus described by Doederlein. In married women bacteria of various kinds and in varying numbers are found. But in infected cases profuse purulent discharge and many bacteria are found often.

Smears and cultures from leucorrheal discharges show a preponderance of anaerobic bacilli. While streptococci and staphylococci are occasionally found and the pseudo-diphtheria bacillus is as yet of unknown significance, a Gram-positive diplococcus is a constant finding. The gonococcus is of course of great clinical importance but it is often difficult to distinguish in vaginal smears. Perhaps its rôle in chronic disease is in preparing the soil for the leucorrhea-producing anaerobic bacteria.

In considering treatment, certain features should be emphasized: (1) The uterine cavity tends to remain free from bacteria; (2) excessive mucus not only increases the amount of

discharge but also acts as a culture medium for the bacteria; (3) the discharge usually originates in the lower portion of the tract; (4) in most cases there is a decreased local vitality and an associated low grade infection.

Therapy, therefore, should be directed to the improvement of the lowered resistance of the genitalia. Not only may lacerations need operation, but systemic conditions demand attention. There should be strict avoidance of treatment which is not definitely indicated or which will injure the tissues. Curettage of the uterus should not be performed. The cervix, however, may be dilated to give better drainage. Douches would seem to be ill-advised, and tampons have been generally discontinued. Scarification of the cervix and cauterization with silver nitrate, 20%, followed by dry powder may diminish the secretion from this source. Residual gonococci may require specific treatment and are difficult to dislodge. Vaccine treatment has been on the whole the most satisfactory method of treatment, giving a fair percentage of cases cured. A most encouraging feature of the vaccine treatment is the relief of backache and general malaise. The various powders give immediate improvement but there is a marked tendency to recurrence.

INOPERABLE CARCINOMA TREATED BY HEAT.

Percy¹⁵ again calls attention to the value of heat in the treatment of inoperable carcinomata of the uterus, which as a matter of fact comprise a large percentage of all the cases seen. In spite of the vast amount of study of cancer we still know too little of it to institute etiological therapy and we have to fall back on some means of destroying the growth. It has been found that in spite of the unduly active proliferation of cancer cells, they are more susceptible to the influence of certain injurious chemical and physical agents than are normal body cells. One of these injurious influences is radioactivity. But for several reasons the field of application is limited though as yet these limits have not been exactly defined. Another agency that will inhibit and destroy carcinoma is heat. In recent years this ancient method has been tested in the laboratory, and it has been found that *in vitro* cells from malignant growths are killed at a lower temperature or are killed more quickly at a given temperature than are normal body cells. It was noticed, too, by Vidal that in several patients with a temperature above 104°, tumor growths were arrested. This led to animal experiments which confirmed Vidal's clinical findings. As a result, Vidal put forth the statement that experimental methods of treating cancer have been effective only when there has been a febrile reaction on the part of the patient. Perhaps the cases of malignant growths which have disappeared after an attack of erysipelas are to be explained in this way. It is found, however, that the margin of safety between the heat necessary to destroy the car-

cinoma and that dangerous to the patient is small. Methods of raising the general body temperature are therefore impracticable. The only agents which have been found so far worthy of consideration are hot air, hot water, steam, electro-coagulation, fulguration and the actual cautery. Hot air, hot water and steam have too little penetrating power. Electro-coagulation requires a special apparatus, a refined and delicate technic and is difficult to control exactly. Fulguration is more satisfactory but perhaps its effects are from heat alone. Still more satisfactory than any of these, on account of the simplicity of apparatus and relatively slight expense, is the actual cautery. By means of special devices in the way of a controlled electric heating iron, a water cooled speculum and a vaginal dilator, inoperable carcinoma of the uterus can be treated with much better results. It is important not to use intense heat as that causes charring and greater likelihood of complication afterward. Several applications may be made and the procedure would be useful as a preliminary to radical abdominal operation. In one case noted by Percy, no carcinoma was found in serial sections eight months after treatment in accordance with this technic. The use of the curette should not be combined with the cautery as the curette tends to cause metastases. As occasionally a late hemorrhage has occurred after the treatment, it may prove advisable to tie the uterine or even the internal iliac arteries previous to the heat treatment.

VAGINAL AMPUTATION OF THE CORPUS UTERI.

The use of this operation is increasing and series of cases are reported by Jung¹⁶ and by Loehnerberg.¹⁷ The chief indication is bleeding from the uterus, usually with no obvious cause, which has resisted other forms of treatment. From an economic point of view it is generally to be preferred to x-ray or mesothorium, and it gives a certain cure without much operative risk. The danger of malignant disease in the stump is not great and the method is to be preferred to vaginal total extirpation. The symptoms of the menopause were less marked than after the removal of the ovaries. In some cases the menstrual function persisted, but with greatly diminished flow, and in general the results are very satisfactory.

EUGENICS AND GYNECOLOGY.

Veit¹⁸ calls attention to the folly of hasty conclusions and ill-advised legal methods of control advocated by some "eugenists." While in theory eugenics demands action, in practice there is as yet too profound ignorance of heredity to make it clear just what action should be taken. The occasion for Veit's discussion of the subject was the presence in his clinic of two patients, one of whom, a chondrodystrophic dwarf of 35 gave birth by Cesarean section to a fine normal child, while the other, a girl of 18,

"pretty as a picture," gave birth naturally to a dead anencephalus. The paper does not lend itself well to condensation but it is a rather comprehensive plea for making haste slowly in the matter of practical eugenics and is to be commended for the wise sanity to be expected of one of Veit's experience.

INFANTILE UTERUS AND PREGNANCY.

The condition of infantile uterus and appendages is generally regarded as giving a bad prognosis for pregnancy. Elliott,¹⁹ however, reports a case in which, following treatment, pregnancy ensued. Another physician had told the patient that she could never have a child as "the uterus was about the size of an English walnut and the ovaries were not palpable." Though the patient was 27 years of age and had been married five years, she had menstruated only three or four times in her life and then only slightly. Corpus luteum tablets were given for several weeks, with massage of the uterus. As the patient noticed very little change, she discontinued the treatment. Three months later the lutein tablets were again started. About two months later pregnancy began and the patient was in due time delivered of a normal child. Before the pregnancy ensued there had been increased menstrual flow and some increase in the size of the uterus as well as a slight change in the general outlines of the body toward a more pronounced female type.

HIGH RECTO-VAGINAL FISTULA.

A case presenting this rather unusual condition with several interesting features is reported by Eden²⁰ and discussed at length. The patient, aged 41, was admitted to the hospital soon after her fifth confinement, which had been an easy low forceps delivery, complaining of complete incontinence of feces. At first all the fecal material passed per vaginam; later some escaped per anum. Following the fourth confinement the patient had been operated on for prolapse and extensive laceration of the cervix. Examination showed that the uterus was fixed, anteverted, and the cervix which had no posterior lip apparently opened into the fistula. The fistula admitted two finger tips and presented its greater diameter transversely to the vagina. The size and inaccessibility of the fistula and the fixing of the uterus indicated the difficulty of the operation. First a preliminary colostomy was performed. This was very satisfactory for the lower bowel collapsed and was easily kept clean though after three weeks the fistula had shown no sign of healing. Hysterectomy seemed indicated as it would give further assistance in exposure and suture, and the abdominal route was selected. The uterus, including all that was left of the cervix was removed. The fistula was then closed transversely to the long axis of the bowel and the first line of suture covered by a flap of vagina. The peritoneal cavity was then

closed off completely from the area below. The operation was long and the patient left the table in some shock but rallied well. The colostomy was doubtless an important factor in giving the fistula opportunity to heal and was closed four weeks after the closure of the fistula by resecting two and one half inches of the gut and doing an end to end anastomosis. Three months later the condition of the patient was quite satisfactory.

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Book Reviews.

A Manual of Personal Hygiene by American Authors. Edited by WALTER L. PYLE, A.M., M.D. Sixth edition, revised and enlarged. Philadelphia and London: W. B. Saunders Company.

The fourth edition of this now familiar work was reviewed in the issue of the JOURNAL for August 11, 1910 (vol. clxiii, p. 263); and the fifth edition in the issue for September 26, 1912 (vol. clxvii, p. 439). This sixth edition has been enlarged twenty-seven pages by minor additions and by the incorporation of a new chapter on the hygiene of infancy. The ten contributing authors remain the same as heretofore. The number of illustrations is increased from 131 to 138. The book maintains its former standard of excellence and there is nothing to add to the opinion of it expressed in our previous review.

Sleep and Sleeplessness. By ADDINGTON H. BRUCE, A.M. Boston: Little Brown & Co. 1915.

This monograph in the "Mind and Health Series" edited by the author, presents a study of the causes, nature and phenomena of sleep from the standpoint of the modern psychologist. The subject of dreams and the supernatural is carefully considered, together with other disorders of sleep and the causes and treatment of insomnia. The book aims to be not merely a scientific presentation but a work of practical helpfulness to the reader, and should thus be

of interest to the intelligent non-professional person in his effort, through correction of disordered sleep phenomena to arrive at a healthier, happier and more efficient life.

The Nursing and Care of the Nervous and the Insane. By CHARLES K. MILLS, M.D., Professor of Neurology in the University of Pennsylvania. Third edition revised by the author, assisted by N. S. YAWGER, M.D., Instructor in Neurology in the University of Pennsylvania. Philadelphia and London: J. B. Lippincott and Company. 1915.

This revised third edition of a standard manual on the nursing of neurologic and psychiatric patients aims to bring the original to date on the basis of newer developments in the knowledge of epilepsy and various of the mental diseases, and in accordance with more recent methods in non-restraint. The volume contains also useful anatomic and physiologic data, and is illustrated by several new charts and diagrams of electric apparatus. The motor point plates are from Dr. Cohn's work on electro-diagnosis and therapeutics. Instruction regarding hydrotherapy is not included in this work. Like the original, this edition is based on the substance of the author's teaching in the training school for nurses at the Philadelphia Hospital and at the Woman's Hospital of Philadelphia. It should continue to serve its useful purpose as a text-book of special nursing.

A Text-book for Midwives. By JOHN S. FAIRBAIRN M.A., B.M., B.Ch. (Oxon.), F.R.C.P. (Lond.), F.R.C.S. (Eng.). With 3 plates and 104 illustrations, 5 in color. London: Henry Frowde and Hodder and Stoughton. 1914.

This text-book for midwives is in reality a text-book on obstetrics by an eminent British obstetrician. Assuming the midwife to be a desideratum in civilization, it could earnestly be hoped, though hardly expected, that she should live up to the knowledge and teaching of this admirable monograph. In European countries the midwife is probably a permanently integral part of the medical and social structure of the community. But in America the midwife is an anomaly and an anachronism; and though she has been introduced by and among the immigrants of our alien population, it is earnestly to be desired that she should not become an established factor in our professional and racial development. The existence of the midwife concomitantly with the physician involves the recognition of a dual standard which is incompatible with the dignity of the profession and the welfare of the public. Dr. Fairbairn's well written work in the series of Oxford medical publications could well be employed as an elementary text-book in medical schools, but as a text-book

for midwives it should have no field for use in this country.

A Manual of the Diseases of Infants and Children. By JOHN RUHRÄH, M.D., Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. Fourth edition. Illustrated. pp. 552. W. B. Saunders Company. 1914.

This fourth edition of a standard manual of pediatrics contains numerous minor changes from the original, with the addition of an article on pellagra in children, a new chapter on drug eruptions, a full account of the Binet-Simon test for the mentality of children and description of the use of the Soy bean and various newer methods in infant feeding. The book is well illustrated with 176 text figures and should continue its valuable service as a text-book for medical students and others.

Studies from the Rockefeller Institute for Medical Research. Vol. XX. New York: The Rockefeller Institute for Medical Research. 1915.

This volume, like its predecessors, consists of reprints of articles recently published as the result of investigations at the Rockefeller Institute. The present series consists of fifty-five papers, in English and German, in the fields of pathology, bacteriology, physiology, pharmacology, chemistry, biology and clinical medicine. Particularly to be noted are the studies of Flexner and others on epidemic poliomyelitis; of Noguehi, on the cultivation of the so-called trachoma bodies; of Rous and others on chicken tumors; of Van Slyke, on the fate of protein digestive products in the body; of Loeb and Lloyd, on artificial pathogenesis. The volume continues the important body of contributions made by the Rockefeller Institute to the progress of medical science.

The Ninth Report of the Henry Phipps Institute for the Study, Treatment, and Prevention of Tuberculosis. Philadelphia, Pa., 1915.

This volume is made up of reprints of articles published in various medical journals on the general subject of tuberculosis. It includes articles by Dr. Paul A. Lewis and others on Experimental Pulmonary Tuberculosis in the Dog, Experimental Tuberculosis of the Cornea, The Function of the Spleen in the Experimental Infection of Albino Mice with *Bacillus Tuberculosis*, and the Iodine Content of Tuberculous Tissues. Dr. H. R. M. Landis writes on The Medical Aspects of Pulmonary Surgery, Tuberculosis and the Public Health, The Health Aspects of the Clothing Industry and of the Pottery Industry, and The Diagnosis of Tuberculosis in

Early Life. Dr. George Ketterolf writes on The Larynx in One Hundred Cases Dying of Pulmonary Tuberculosis.

Aside from its intrinsic worth, the volume is interesting as a record of the scientific and useful work which this institution is accomplishing.

Factors Affecting the Health of Garment Makers. By H. R. M. LANDIS, M.D., and JANICE S. REED. Fifth Report of the Henry Phipps Institute for the Study and Prevention of Tuberculosis. Philadelphia, Pa. 1915.

Dr. Landis records the results of his investigations of health among garment workers under the following chapters: Rise of the Problem, Condition of Factories Studied, Racial Characteristics, Physical Condition of Employees, Physical Ailments as Related to Age and Trade Processes, Home Environment, Habits of the Workers, Wages and Trade Life as Related to Factory Conditions, Tuberculosis, Fatigue, Eye Conditions Encountered among "Pressers," and concludes with a general summary and recommendations. The information which the book contains is carefully and systematically arranged and clearly stated. As a record of conditions to be encountered in social and public health service, it should prove a valuable addition to the already existing literature on this subject of industrial hygiene. The volume contains a number of photographs taken of typical conditions in factories as the author found them, and a large number of tables and charts.

A Text-Book of the Practice of Medicine. For Students and Practitioners. By HOBART AMORY HARE, B.Sc., M.D. Third edition, revised and enlarged. Imperial octavo, 969 pages with 142 engravings and 16 plates in colors and monochrome. Philadelphia and New York: Lea and Febiger. 1915.

Dr. Hare has made very extensive changes in his third edition and has given us essentially a new book based on the general outlines of his previous edition. He has adhered to his original purpose of making the book reflect his personal views wherever possible. For example—in his discussion of the treatment of typhoid fever he outlines his own management of the diet and makes no reference whatsoever to the use of the liberal diet originally advocated by Shattuck, and carried to the extent of forced feeding by Coleman. References to the literature are not infrequent, but do not comprise a feature of any importance in the book. On the whole, like its predecessors, this edition is a sound exposition of the practice of medicine, based chiefly on the writer's wide experience in hospital and private practice. A very complete index is a valuable feature.

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GROWTH AND DISTRIBUTION OF POPULATION.

THE recently issued unofficial preliminary figures of the 1915 decennial census of Massachusetts present interesting data with reference to the population of this State. This census, which was taken as of April 1, 1915, shows a net increase of approximately 8.3% in the population of Massachusetts since the United States census of 1910. During the quinquennium for 1905-1910 the increase was 12.1%, and from 1900 to 1905 only 7.1%. The total population of the state is now 3,646,768. Massachusetts is now the sixth state in population, being exceeded by New York, Pennsylvania, Illinois, Ohio and Texas.

The population of Boston is stated as 725,823 as compared with 686,000 in 1910 (including Hyde Park), a gain of 39,823, approximately 5.8%. It had been estimated by census officials at Washington that the population of Boston on April 15 should be 733,802. Failure to reach

this expected figure leaves Boston still the fifth city in size in the United States.

In Massachusetts there are thirty-five cities and their approximate total population is now 2,537,949, about 69.3% of the total population of the State. In 1910 these cities contained 69.7% of the total population, indicating a slight, though very slight, tendency toward decentralization during the past quinquennium. The population of the metropolitan district known as Greater Boston is reckoned as 1,556,982, as against 1,423,429 in 1910. This metropolitan district includes 38 communities in addition to Boston. Of the cities outside Greater Boston only two, Salem and Gloucester, have decreased in population and these but slightly. The greatest gain in population was 33% in Chelsea, representing the rehabilitation of the city following its disastrous conflagration. A similar rehabilitation may doubtless be expected hereafter in Salem. Of the towns in the Commonwealth, over 70 show a decrease of population during the past quinquennium.

There has been an increase of population in every county of the State. This increase was greatest in Suffolk County, with Middlesex and Hampden ranking second and third. In Barnstable, Dukes and Nantucket Counties the increase has been but a few hundred. The distribution of population by counties in 1915 and 1910 is shown in the following table:—

	1915	1910
Barnstable	28,578	27,542
Berkshire	114,162	105,250
Bristol	344,490	318,573
Dukes	4,878	4,504
Essex	450,868	436,477
Franklin	48,172	43,600
Hampden	260,424	231,369
Hampshire	69,164	63,327
Middlesex	724,974	609,915
Nantucket	3,153	2,082
Norfolk	200,765	187,566
Plymouth	155,904	144,337
Suffolk	806,205	731,388
Worcester	426,131	399,667

Totals for the State. 3,646,768 3,366,416

In his statement accompanying the publication of these figures Mr. Charles F. Gettemy, director of the Massachusetts Bureau of Statistics, speaks particularly of the relation existing between immigration and the growth of population.

"The most obvious reason for the slowing down in the rate of increase during the latter half of the decade 1905-1915 is found in the recent notable decrease in immigration, which began even before the outbreak of the European War. For the United States fiscal year ending

June 30, 1907, immigration reached high-water mark, both in the number admitted to the United States and in the number destined for Massachusetts, a condition visibly reflected in the census figures for 1910. What the number will be for the year ending June 30, 1915, we do not yet know, but some idea of the shrinkage in population growth during the past year in Massachusetts alone may be obtained from the fact that during the eight-month period from the outbreak of the war, Aug. 1, 1914, to April 1, 1915, when the census was taken, the net increase in the population of the state from immigration (assuming that aliens giving their destination as Massachusetts, actually settled here), was, according to the reports of the United States Bureau of Immigration, 4430, as against 44,496 during the corresponding eight-month period of the preceding year. Immigration as affecting Massachusetts, however, began to show a perceptible decrease even before the outbreak of the war, for during the year ending June 30, 1914, the number giving their destination as Massachusetts was 8000 less than during the preceding year."

For some time it has been a matter of observation, and, among the thoughtful, of concern, that, although the population in this country has been steadily growing, this growth has been due largely to immigration and to the prolific fertility of recent immigrant families rather than to increase in the older native stock. In fact, the declining birth-rate among older American families stands already next to that of France, and is only slightly surpassed by that of Great Britain. Of the foreign white stock in the United States in 1910, the largest group was that of the English and Celtic, who numbered 10,037,420, representing 12.3% of the total white population of the United States in that year. The German group stood second, numbering 8,817,271, or 10.8%. The Italian group stood third, with 2,151,422, or 2.6%; the Polish group fourth, with 1,707,640, or 2.1%; and the Hebrew fifth, with 1,676,762, or 2%. Of the remaining persons of foreign white stock the majority were of various Slavic races. These data are based on a bulletin of the United States Census Bureau issued in May, 1914.

All these persons of foreign white stock constitute nearly 40% of the total white population of the country, and the remaining 60% a rapidly increasing proportion is made up of the first and second generations of the children of alien immigrants.

The relative proportion of the sexes in different parts of the country presents facts of interest. In the United States as a whole there

are 2,692,288 more men than women. This excess is determined chiefly by the population of the Western states. In the Pacific states the ratio of males to females is 129.5 to 100, and in the mountain states 127.9 to 100. In Massachusetts there are 55,920 more women than men. Rhode Island has an excess of 1,982 women. The only other states in which women predominate are Maryland and North and South Carolina. In Boston there are 11,171 more women than men, and in Philadelphia 28,082 more women. In New York, Chicago, St. Louis, Minneapolis and Pittsburgh, there is a very slight excess of men. Among the inhabitants of all the large cities in the United States there is an excess of 368,979 men over women, whereas in the rural districts there is an excess of 2,323,309 men.

These phenomena of population and their fluctuations perhaps derive their chief interest for physicians from the suggestions which they afford of the probable racial future of this country with the future development of the various ethnic groups of which its population is composed.

THE MORPHOLOGY OF THE CORPUS STRIATUM.

In the issue of the *JOURNAL* for March 18, 1915, we published an item largely quoted from the work of Dr. S. A. K. Wilson in the *Lancet* and in *Brain*, on the function of the corpus striatum. Dr. Wilson concluded that the corpus striatum exercises a fairly definite function and that it is subject to a degenerative disease process clinically evidenced by a fairly definite train of symptoms known as the lenticular syndrome.

In the issue of the *Journal of Nervous and Mental Diseases* for June, 1915, Dr. James H. Lloyd approaches the same subject from the somewhat different standpoint of morphology. The corpus striatum, he points out, is, from an evolutionary point of view, one of the oldest portions of the mammalian brain. "It was, in fact, the whole brain in the arthropods, being known today as the supra-esophageal ganglion, and it continued to do duty as practically the whole fore-brain in the earliest vertebrates up to and including the fishes." Our knowledge of the morphology of the corpus striatum rests largely on the work of Gaskell (*The Origin of Vertebrates*, 1908):—

"In his treatise on the origin of the vertebrates Gaskell undertakes to establish the thesis that the vertebrates were developed from the arthropods, and that the cerebrospinal axis of the vertebrates was originally developed around and including the gastrointestinal tract of this lower form. If you will stop to reflect a moment, you will recall that in the arthropods, which include the crabs and the spiders, as well as in still lower forms, such as the insects and the segmental worms, the nervous system lies ventrad of the gastro-intestinal tract. It consists of a chain of ganglia lying beneath the creature's ventral surface; whereas in the vertebrates just the opposite is true, for in them the cerebrospinal system is located dorsad of the stomach and intestine. For a long time this was a stumbling block to evolutionists, for the problem stared them constantly in the face how the vertebrates ever succeeded in getting their nervous system on top of their bellies. The evolutionists resorted to all sorts of expedients to explain this apparently inexplicable thing; and such an eminent morphologist as Owen even proclaimed his belief that before the arthropod could have developed into a vertebrate, the creature must have turned over on its back."

As a matter of fact it appears that the nervous system of the vertebrate was evolved by building up nervous tissue around the old gastro-intestinal tube of the arthropod. The infundibulum thus represents the old esophagus, the pineal gland is the median eye, the corpus striatum the supra-esophageal ganglion, the cerebral ventricles represent the arthropod's stomach, and the spinal canal its intestine. Lloyd, therefore, regards the corpus striatum largely as a vestigial organ and doubts whether it continues in the human brain to exercise any functions whatever. There is little or no histologic evidence of any direct connection between the cortex and the corpus striatum. He is inclined, therefore, to doubt the clinical validity of the lenticular syndrome as a disease entity. Even Wilson admits that "there is no vestige of evidence that in man the corpus striatum is capable of assuming a long lost function and of acting vicariously for the motor pallium." Lloyd believes that the symptoms caused by lesions of the lenticula are merely symptoms derived from various affections of the internal capsule and that the lenticula has no other relation to the capsule than contiguity and common blood supply. He does not regard the corpus striatum as a coordinating center for speech, since morphologically and phylogenetically it could have no such function.

PEDIATRICS IN BOSTON.

THE June issue of the *Archives of Pediatrics* is published as a special Boston number and consists of seven original articles by pediatric members of the profession from this city. The first article, by Dr. John L. Morse, deals with Boston as a pediatric center and describes particularly the pediatric clinical facilities of this city and the opportunities of instruction offered by the department of pediatrics in the Harvard Medical School. The second article, by Dr. Maynard Ladd, contains essentially the same material on the subject of homogenized olive oil and fat-free milk mixtures, in cases of difficult feeding, which he presented before the New England Pediatric Society in Boston on Feb. 26, 1915, and which was published in the issue of the *JOURNAL* for July 1. The third article, by Dr. Charles H. Dunn and Dr. William W. Howell, presents a discussion of the diagnosis and treatment of pyloric stenosis and pylorospasm, based upon the experience of the Infants' Hospital. The fourth article, by Dr. Richard M. Smith and Dr. Stanley Cobb is a clinical and pathological study of one hundred infants, being a correlation of the data of two summers' work on the Boston Floating Hospital. These data are summarized under the headings of the gastro-intestinal tract, urine and kidney, tuberculosis, lymph nodes, fatty livers, lungs and size of the stomach. The fifth article, by Dr. Fritz B. Talbot, is a study of the energy metabolism of an infant with congenital absence of the cerebral hemispheres.

In the sixth paper Dr. Philip H. Sylvester and Dr. Freeman H. Hibben present a clinical and laboratory study of the relation of the gas bacillus to infective diarrhea and other digestive disturbances in childhood. They find that the gas bacillus is not a normal constituent of the human infantile intestinal flora, but that its pathogenicity is apparently demonstrable in certain cases of infectious diarrhea, fat intolerance and chronic intestinal indigestion. They believe that the dietary treatment by means of unpasteurized fat-free, lactic acid milk, which imposes conditions unfavorable to the growth and activity of the gas bacillus, is rational, safe and more immediately effective than any other treatment hitherto advocated.

In the seventh paper Dr. Joseph I. Grover records a study of measurements of a number of normal children, especially of the leg and arm, and suggests some interesting deductions and

practical possibilities. By graphic and tabular record and comparison he finds that the circumference of the head and chest bear a much more accurate relation to the weight than to the age of the individual, whereas the arms and legs grow in a definite relation to the increase in height. This growth bears a closer relation to the height than does percentage of the height to the age. Age, therefore, he concludes, is a poorer basis for the comparison of any dimensions than are weight and height, since development and age are not constantly parallel.

This issue of the *Archives of Pediatrics* thus presents a variety of contributions illustrating the range of the clinical and laboratory material in pediatrics available in Boston; and it is a pleasure to acknowledge to the editors their courtesy to this city and its profession in the preparation and publication of this special number.

FIRSTBORN CHILDREN AND SIZE OF FAMILIES.

In the July number of the *Journal of Heredity*, the official organ of the American Genetic Association, is an article by Professor Karl Pearson of the University of London, presenting the statistics of several thousand cases analyzed to determine the physical and mental quantities of firstborn as compared with later children. From this study he reaches the conclusion that the firstborn are physically and mentally inferior and have a poorer resistance to various infections, especially tuberculosis. These statistics, it may be mentioned, have been borne out by a similar study recently made by Mr. John H. Chase among students at Amherst College.

Professor Pearson further finds that there is an abnormally high percentage of firstborn children among the feeble-minded, insane, epileptic and criminal. It should be remembered, however, that this fact, like the higher percentage of still births among firstborn, may be accounted for partly by dystocia, partly by the predilection of congenital lues for first children. Mr. Chase's figures refer chiefly to physical vigor as evidenced by gymnastic strength tests, which represent probably the progressively increasing size often observed in the successive children of a family. For various reasons, however, it does appear that firstborn children are likely to be in various ways inferior to their later brothers and sisters.

The important and significant practical conclusion from these observations is, of course, the extreme undesirability of the limitation of families to one or two children. If the normal family be held to consist of five children, the inferior firstborn may often be the ones who will subsequently perish in the struggle for existence; and if they survive they constitute only a fifth of the population where their inferiority is of diminished importance. With families consisting of only one or two children, however, the firstborn will ultimately come to constitute a half or more of the population, with the result of racial decline not only in numbers, but in physical and, perhaps, mental vigor. As a matter of fact there is contemporary evidence of the probable truth of this conclusion in the phenomena of greater physical efficiency and vigor observed among the more prolific as compared with the less prolific European races.

ROCKY MOUNTAIN SPOTTED FEVER.

In another column of this issue of the *JOURNAL* we publish a brief clinical summary by Dr. Pope of Nevada of the present knowledge of Rocky Mountain spotted fever, that striking typhoidal disease of insect transmission. This disease has been for many years endemic in certain portions of Montana, Idaho, Nevada and Oregon, and recently, as noted in the weekly bulletins of the United States Public Health Service, it has made its appearance in Washington. Five cases of the disease were reported in Washington during May of this year, in Lincoln County, and on July 6, one case in Douglas County. During June there were five cases with four deaths in the Bitter Root Valley, Montana; and from March 1 to June 1 there were 206 cases with eight deaths in the southern part of Idaho. The disease is serious, usually with a high mortality, and its treatment, until some specific be discovered, is symptomatic and prophylactic. By way of prevention, the most effective method is dipping the sheep to destroy the ticks which, in springtime, infest their fleece, for although the tick infests other animals, the sheep seems to be the principal host. The development of the knowledge of this disease is an important achievement to the credit of American scientific medical research and is owed chiefly to Dr. Rucker of the United States Public Health Service and to Dr. Ricketts, who

subsequently lost his life by infection with typhus fever which he was studying in Mexico. The hope of ultimate eradication of spotted fever, as of other diseases dependent for their transmission upon intermediate insect carriers, rests upon the possibility of exterminating this carrier and isolating all active cases of the disease.

MEDICAL NOTES.

THE WEEK'S MORTALITY IN NEW YORK.—Figures prepared by the Department of Health show that during the past week 1376 deaths were reported in the Greater City of New York, an increase of 90 over the number reported during the corresponding week of last year. Forty-two of these are accounted for by the increased population; the other 38 to the virulence of certain diseases, particularly measles, lobar and bronchial pneumonia.

Bright's disease showed an increase over the corresponding week of last year for the first time in several weeks. Nor was this increase offset by a saving of lives from chronic heart disease.

Despite the warm weather that prevailed during the latter part of last week, the death rate from diarrheal diseases was decidedly lower than during the corresponding week of last year.

The increase in the number of deaths last week was evenly distributed amongst all age periods, the group under five years showing the largest proportion, in which group there was an increase of 43 deaths. The group under 1 year of age escaped with a small increase of 7 deaths.

The death rate for the first 29 weeks of 1915 is 13.94, as compared with 14.42 for the corresponding period of last year.

FATALITY OF FOOT AND MOUTH DISEASE.—A report issued by the Pennsylvania Live Stock Sanitary Board on July 14 states that during the outbreak of foot and mouth disease last winter and spring, over 15,000 cattle and 13,000 swine were destroyed in that commonwealth. The cost of thus eradicating the disease in Pennsylvania was \$1,350,000, of which the United States Government pays one-half.

ESTABLISHMENT OF KEEN RESEARCH FELLOWSHIP.—Professor W. W. Keen has established the Corinna Borden Keen Research Fellowship in the Jefferson Medical College, the income from which now amounts to \$1000. The gift provides that the recipient of the Fellowship shall spend at least one year in Europe, America or elsewhere (wherever he can obtain the best facilities for research in the line of work he shall select, after consultation with the Faculty) and that he shall publish at least one paper embodying the results of his work as the "Corinna Borden

Keen Research Fellow of The Jefferson Medical College." Applications stating the line of investigation which the candidate desires to follow, shall be forwarded to Dr. Ross V. Patterson, Sub-Dean, Jefferson Medical College, Philadelphia, Pa.

EGYPTIAN VITAL STATISTICS.—The Egyptian government has recently published the vital statistics of its principal towns, governorates and provinces for the year 1914. "This report records 76,322 births (not including 2744 stillbirths) and 58,641 deaths. The birth rate is slightly below that of 1913—44.6 as against 45.1—but the natural increase is somewhat greater, for the death rate has fallen from 35.2 to 34.3. Typhus is responsible for the largest number of deaths attributed to infectious diseases, the total number of cases being 9350, the provinces of Daqahalia and Beheira each returning more than two thousand, with 2531 deaths. Smallpox is represented by 6788 cases and 1568 deaths, and measles produced 5045 cases with 2272 deaths. Only 219 cases of plague were reported, 50 of these from Port Said. Typhoid was responsible for 1966 cases and 612 deaths. The estimated population (July 1, 1914) was 1,710,857."

PREVALENCE OF PELLAGRA, PLAGUE, POLIOMYELITIS, SMALLPOX AND TYPHOID.—The weekly report of the United States Public Health Service for July 16 notes that during the week ended June 26 there were six deaths of pellagra in Charleston, S. C., and three cases of poliomyelitis with one death in New York City. During the same week there were twenty-one cases of typhoid fever with one death in New York City and twenty cases and one death in Charleston, S. C. There were also two deaths from virulent smallpox at El Paso, Texas, and two cases with one death at New Orleans, La. On July 7 a plague infected squirrel was found in California and on July 14 a plague infected rat in New Orleans.

INTESTINAL INFECTION AND SEWAGE DISPOSAL.—In a recent issue of the *Public Health Reports*, Dr. C. W. Stiles records the results of an investigation of the prevalence of intestinal infections in children as influenced by sewage disposal. He has taken for investigation a town in the coastal area of a Gulf-Atlantic state with a total population of 30,000, the whites outnumbering the negroes. The city was but partly sewered. Twenty-five hundred white children and 1350 negroes were examined for worm parasites, the sexes in each division being about equal.

"The parasites, which could be acquired only through swallowing them and whose origin is human wastes, were found in 20% of the white girls, 49% of the negro girls, 34% of the white

boys and 47% of the negro boys. Throughout the tabulation the white girls have everywhere low rates, but even in the houses having sewer connections the rate of infection is about 19%. Those infections that were probably through the skin range from 20 to 30% in the white children in unsewered homes, 6 to 10% in sewerer houses, while for negro girls the rate is below 5% and for boys less than 2%. These last figures, however, rest on comparatively small numbers.

"The conclusions of Professor Stiles from his investigation are that there is a vast amount of unconscious coprophagia in human beings, that it is a very variable amount even in the same community, and that the outhouse in thickly settled communities is a distinct danger."

MEDICAL ASPECTS OF GASTRIC CARCINOMA.—In connection with the cancer number of the JOURNAL on July 15 we are glad to call attention to an article on the medical aspects of gastric carcinoma by Dr. Joseph C. Bloodgood of Baltimore, appearing in the *Journal of the American Medical Association* on June 19. The observations noted in this article suggest that the true aspect of the result of surgical intervention in cancer of the stomach points with particular fatality to the fruitlessness of delayed treatment. In the series of 184 cases upon which Dr. Bloodgood's paper is based, 74% were already inoperable when first seen. The significance of this fact is obvious and should emphasize to the profession, as well as to the laity, the cardinal importance of the earliest investigation of obscure gastric symptoms in order to make surgical aid for incipient gastric carcinoma of practical avail.

VALUE OF CHAULMOOGRA OIL IN LEPROSY.—In the issue of the JOURNAL for July 8 we commented editorially on the use of chaulmoogra oil at Molokai in the treatment of leprosy. This oil is made from the seeds of *takatogenos kurzii* and is combined with camphor and resorcin for hypodermic administration.

In the leper colony at Culion, Philippine Islands, there were at the close of 1912, 2615 lepers. The report of the Philippine Commission for this year spoke as follows of the use of chaulmoogra oil for their treatment.

"Chaulmoogra oil, when taken continually over long periods of time, continues to prove most useful in treating the disease, and results in some apparent cures. Unfortunately, most persons experience difficulty in taking it.

"Twelve colonists who had been treated with chaulmoogra oil were sent to Manila apparently cured of leprosy, but it was subsequently necessary to return two of them who had suffered relapse."

In March, 1914, the *Lancet* recorded the discharge by Dr. Victor G. Heiser from the San Lazaro Hospital for Lepers at Manila of two

patients who, after this treatment, had been free from manifestations of the disease for two years. A report from Manila on July 15 states that Dr. Mercado, a local Filipino physician has reported 80 cases of leprosy treated with chaulmoogra oil of which 23 have been discharged as cured.

Despite the apparently favorable character of these reports the specific curative value of chaulmoogra oil must await further and longer experimental trial and demonstration.

MEDICAL BROTHERHOOD FOR INTERNATIONAL MORALITY.—In the issue of *Science* for April 9, 1915, was published an address by Dr. S. J. Meltzer of the Rockefeller Institute for Medical Research on "The Deplorable Contrast between Intrnational and International Ethics and the Mission of Medical Science and Medical Men." On the basis of the theories advanced in this address Dr. Meltzer has recently issued an appeal to physicians in the United States to join in the creation of a medical brotherhood for the furthering of international morality. To this end there has been formed a committee of 120 well known physicians and it is hoped that financial support may be obtained from the Carnegie Endowment for International Peace.

GREAT INCREASE IN FATAL AUTOMOBILE ACCIDENTS IN NEW YORK CITY.—Figures prepared by the Bureau of Records of the Department of Health show that during June, 1913, 34 persons were killed upon the streets of New York City by automobiles, an increase of 70% over the number of similar accidents that occurred during June, 1914. This increase is not at all exceptional; it is, on the contrary, only a reflection of the steady increase in this class of accidents that has been going on for several years, as is borne out by the following table:—

	Manhattan.	The Bronx.	Brooklyn.	Queens.	Richmond.	City.
1910.....	63	13	25	7	3	111
1911.....	77	8	38	3	2	128
1912.....	120	14	44	9	1	188
1913.....	173	33	64	16	7	293
1914.....	168	30	86	22	4	310
1915 (6 months)...	104	14	24	8	2	152

The second half of the year always shows higher figures than the first half. The total number of accidents will therefore be considerably higher this year than in 1914.

During the first six months of 1915, 152 lives were needlessly sacrificed. Aside from the humanitarian side of the question, this loss of life entailed an immense economic loss, which has swollen to a still greater total by the numbers disabled temporarily or permanently. A conservative estimate is that one person in ten injured dies. Assuming this ratio to have held

good in this city during the six months of 1915, there were 1520 persons injured by automobiles.

According to the Health Department the cause of the increase is to be found in the increased number of motor cars in the city streets, and it calls on the people of this city immediately to attempt to secure uniform standards for all who operate motor vehicles, and to demand more stringent enforcement of existing regulations.

The department points out that the control of an automobile in the streets of New York is not a task for a child, an untrained amateur, a neurasthenic, an excitable person or a weakling. In the hands of such persons, a motor vehicle is an engine of death. It is the clear duty of the authorities, then, to see that the competency and trustworthiness of every would-be operator is satisfactorily established. How does the legislature perform this duty? By the enactment of a statute which requires no test of an owner's capacity, and which expressly prohibits any local authority from enacting supplementary protective regulations.

Under the highways law of the state of New York, any owner or any member of the family of an owner is permitted to drive a motor car. The question of mental or physical capacity does not enter; and yet there is not the slightest doubt about the risk involved.

In commenting on the increase in deaths from automobile accidents, Commissioner Goldwater said: "The Department of Health is helpless in the matter. What we need is legislation equal in effectiveness, equal in common sense and in humanity to that of other states. If the legislature is unwilling to enact protective regulations applicable throughout the state, then we ask that the hands of the Board of Aldermen and the Board of Health be untied, so that there may be adopted in this city, at least, an ordinance which will compel those who desire to operate motor vehicles on the streets of the city to submit to an adequate test of fitness as a condition precedent to the obtaining of a license or permit. We call upon the people of the city for their support in this altogether reasonable demand, which will be renewed with emphasis when the next legislature convenes."

PREVENTIVE MEDICINE IN THE UNITED STATES ARMY.—The latest annual report of the surgeon general gives a very gratifying account of the decline of disease rates in the United States Army for the year 1913. Smallpox and typhoid fever have been practically eradicated from the Army. The rate for malaria fell from 84.36 to 24.75. The admission rate for venereal disease for 1913 was 97.22. The rate for the previous year was 136.7, a decrease of about 30% in one year. A corresponding decrease for another year or two would bring the rate to about 40, that attained by the German army just prior to the outbreak of the war. In ten

years the rate of sickness from all causes fell from 1230 to 671, almost 50%. The death rate, however, has fallen but 30%. The number of men per 1000 excused from duty on account of illness now is less than half what it was ten years ago. Alcoholism in the army was at its worst in 1907. Since that time it has also fallen 50%.

ST. LOUIS EXPEDITION TO CENTRAL AMERICA.—On Monday of this week, July 26, there started from St. Louis, a scientific expedition from the St. Louis University to study tropical diseases in Central America. This expedition, which will proceed first to British Honduras, is in charge of Dr. Edward Nelson Tobey, instructor in tropical diseases at the University.

AMERICAN SURGICAL ASSOCIATION.—At the annual meeting of the American Surgical Association held in June, 1915, at Rochester, Minn., it was voted to hold the next session at Washington, D.C., in 1916. The following officers were elected for the ensuing year:

President, Dr. Robert G. Le Conte, Philadelphia; vice-presidents, Drs. Charles L. Gibson, New York City, and Archibald MacLaren, St. Paul; secretary, Dr. John H. Gibbon, Philadelphia; recorder, Dr. John F. Binnie, Kansas City, Mo.; and treasurer, Dr. Charles H. Peck, New York City.

ALCOHOL AND THE FRENCH BIRTHRATE.—Report from Paris on July 19 states that an investigation has recently been made by Charles Benoist into the causes of the progressive depopulation of France. For this purpose he selected the Canton of Creully, in the Arrondissement of Caen, where the decline of population has been particularly notable. He believes that he has found a definite connection between the decreasing birthrate and the consumption of alcohol, particularly of cider brandy which is distilled and drunk by the natives in great quantity. The custom of taking brandy in coffee probably leads to a larger consumption of the former than would otherwise be the case.

"Whether drink may be considered the cause of the decrease in the birthrate or not, the progression of depopulation seems to have kept pace with the progression of alcoholism. Where the consumption of spirits was formerly a gallon and a half a year per capita, it is now more than three gallons, while the decreased birthrate traced back through many generations in the same families by Monsieur Benoist shows a decrease from an average of seven children a family in the nineteenth century to three in the twentieth."

In the department of Calvados which constitutes 1% of the population of France there are 4% of the total number of controlled distilleries in that country which in 1912 produced 170 gallons of pure alcohol, equivalent to 485

gallons of brandy, a rate of more than a gallon per capita. It is stated that in some communes the annual consumption of cider brandy approaches 10 gallons per capita.

ROCHESTER DENTAL DISPENSARY.—At a meeting on July 20 of the Rochester (N.Y.) Dental Society, there was announced a gift of \$300,000 from Mr. George Eastman for the erection in that city of a free dental dispensary.

EUROPEAN WAR NOTES.—Report from Washington, D.C., on July 17 states that as a result of the European War, American exports of medicine and surgical instruments have nearly doubled. It is estimated by the Bureau of Foreign and Domestic Commerce that during the year ended June 30, 1915, the exports of this class of goods amounted to \$35,074,000 in value as compared with a value of \$19,916,000 during the year ended June 30, 1914.

Report from New York states that Dr. F. H. Hodge of Knoxville, Tenn., reached this country on July 18, aboard the *Cymric* on his return from Liverpool. He stated that the maximum of typhus infection in Serbia was reached in March of this year when 48,000 cases were recorded. At present the number of cases is less than 1,000. Dr. Hodge is quoted also as saying that ten American Red Cross nurses have been transferred from Serbia to Malta where a military hospital has been established for the care of the wounded from the allied armies at the Dardanelles.

Report from Budapest by way of Geneva and Paris on July 16, states that during the week ended June 28 there were in Hungary 543 cases of Asiatic cholera with 281 deaths. Of these, 81 cases and 24 deaths were among soldiers.

It was announced in New York on July 19 that the American Red Cross is to establish an obstetric hospital in Serbia to be known as the Mabel Grouitch Hospital. It is expected that this institution will be in charge of Dr. Louise Taylor Jones of Washington, D. C., with Dr. Katherine H. Travis of New Britain, Conn., as her assistant.

In another column of this issue of the JOURNAL we publish an extensive statement of the rise in price of drugs since the outbreak of the European war. On July 23 it was further announced that antipyrin has advanced in cost from \$9.50 to \$13 a pound and caffeine from \$5 to \$8 a pound since July 1. On June 3, 1915, antipyrin was selling at \$6.50 and caffeine at \$4 a pound.

On July 24 the total of the New England Belgian relief fund amounted to \$265,775.10; and that of the Polish fund to \$48,941.01.

BOSTON AND NEW ENGLAND.

RECORD ATTENDANCE AT MILK STATIONS.—The Boston Milk and Baby Hygiene Association reports that last week it cared for the largest number of babies in its history, the total number being 612, which was more than double the number of the previous week, 302.

OPEN AIR SCHOOL ON CASTLE ISLAND.—There has been opened at Fort Independence, Castle Island, an open air school attended by 125 pupils of three South Boston schools. It is maintained by the Association for Control of Tuberculosis, Instructive District Nursing Association and the Boston Dispensary. Miss Katherine French of Boston is in charge. The children are provided with a lunch and all the milk they can drink and are charged five cents a day to help defray expenses. Contributions for carrying on this important philanthropy may be sent to W. G. Wendell, treasurer, 60 State Street, Boston.

POLIOMYELITIS IN VERMONT.—The first well marked outbreak of poliomyelitis in Vermont occurred in the year 1894 when there were 126 cases at Rutland with 18 deaths. Since that time the disease has apparently become endemic in that state with occasional sporadic outbreaks of which the most extensive was that of 1913 when there were 200 cases. The cause of this recent development of poliomyelitis in a state hitherto apparently free from it is uncertain, but may probably be traced to some carrier who settled in Rutland and from whom the infection has since been spread, very possibly by insects.

WATER SUPPLY OF BOSTON AND VICINITY.—The Metropolitan Water Works, which supplies with water the cities of Boston, Chelsea, Everett, Malden, Medford, Melrose, Newton, Quincy and Somerville, and the towns of Arlington, Belmont, Lexington, Milton, Nahant, Revere, Stoneham, Swampscott, Watertown and Winthrop, a total population of 1,777,770, required for its maintenance during the past calendar year the sum of \$413,078.95. The quantity of water supplied to the Metropolitan Water District during this time was 107,036,100 gallons, an equivalent to 94 gallons for each person. This quantity was 3,188,400 gallons more than the average daily consumption of the preceding year.

ADAMS NERVEINE ASYLUM.—The recently published thirty-eighth annual report of the Adams Nerveine Asylum in Jamaica Plain, Mass., gives the following information regarding its affairs for the year ending May 1, 1915.

The number of patients under treatment during the year was 225 (51 men and 174 women). Of these, 40 (6 men and 34 women) were in the Asylum May 1, 1914, and 185 (45 men and 140 women) were admitted during the year. There were discharged as recovered, 10; relieved, 120;

not relieved, 44; declining treatment, 2. Two patients died, and 47 (14 men and 33 women) were remaining in the Asylum April 30, 1915. The daily average number of patients was 44 (men, 12; women, 32).

The average cost per week for each patient, including all payments charged to current expenses, was \$24.01.

The amount received from patients was about 38% of the expenses.

FOOT AND MOUTH DISEASE IN MASSACHUSETTS.—It is announced by the Massachusetts State Bureau of Animal Industry that this Commonwealth is now free from the epizootic of foot and mouth disease and that the quarantine imposed in November, 1914, is now removed except for the transportation of cattle to and from Watertown and Brighton. Farmers whose stock has been slaughtered have been urged by the Bureau to restock their barns in order that it may be decided whether or not the disease still lurks in the buildings. This is being done generally and no new outbreaks have yet been reported.

RETURN OF THE FIRST HARVARD SURGICAL UNIT.—A majority of the members of the first Harvard Surgical Unit have returned safely to the United States aboard the French steamship *Rochambeau* landing at New York on July 13. This unit sailed from New York on March 17 aboard the *Canopic* and since April 1 has been in charge of the University service in the American Ambulance Hospital at Neuilly, Paris. Dr. F. A. Collier, who went out with the unit, has joined an English unit for service in a British military hospital and Dr. George Benet has taken service in an Anglo-French Red Cross hospital near the firing line north of Compiègne.

DR. CREEL AS BOSTON HEALTH COMMISSIONER.—In the issue of the *JOURNAL* for May 13 we announced the acceptance by Dr. Richard H. Creel of the United States Public Health Service of an appointment as health commissioner of the city of Boston. In the issue of the *JOURNAL* for June 10 we published a further statement containing a letter from Dr. Creel in which he expressed the necessity of declining this appointment on account of his health. In the issue of the *JOURNAL* for July 1 we published another announcement of Dr. Creel's decision again to reconsider his action and to accept the appointment for one year beginning July 1, 1915. It now appears, according to report from Washington, D.C., on July 14, that Dr. Creel's health is not sufficiently good to permit his undertaking this work at present. Without definitely declining the appointment, therefore, he is to go on furlough for vacation after which a decision as to his acceptance will be definitely made.

Dr. Creel has recently been engaged in the work of plague prevention by extermination of

rats in New Orleans, since the outbreak of the disease in that city last summer. During this time there have been trapped and killed in New Orleans 396,151 rats of which 244 were found infected with bubonic plague. Of those infected 216 were Norway rats, who numbered 202,570 of the total number killed. The last human case of plague at New Orleans was reported on October 4, 1914.

MELROSE HOSPITAL TRAINING SCHOOL.—The annual graduation exercises of the Melrose Hospital Training School for Nurses were held at Melrose, Mass., on July 21. The principal addresses were made by Dr. Walter R. Bowser, secretary of the Massachusetts State Board of Registration of Nurses, and by Miss Mary Beard, director of the Boston Instructive District Nursing Association.

RECENT HOSPITAL BEQUESTS.—The will of the late William Bradford Weston of Milton, Mass., which was filed for probate on July 14 in the Norfolk Probate Court at Dedham, Mass., contains bequests of \$15,000 each to the New England Hospital for Women and Children, the Massachusetts Homeopathic Hospital, the Massachusetts General Hospital, the New England Peabody Home for Crippled Children, the Perkins Institution for the Blind and the Vincent Memorial Hospital. These legacies, however, do not come into effect until twenty years after the death of the longest lived of 31 personal beneficiaries named in the will for whom funds are held in trust. The will further establishes a trust fund of \$6000 to be held by the Massachusetts Hospital Insurance Company for the term of 100 years. At the end of this time the accumulated fund is to be divided into two parts of which one shall be used for the erection in Milton, Mass., of a small free fire-proof hospital to be known as the Weston Hospital. Seven-eighths of the other part are to be used for the erection of a similar hospital at Duxbury, Mass.

The will of the late Mary J. Neas of Jamaica Plain, Mass., which has recently been filed for probate, contains bequests of \$500 each to the Boston Nursery for Blind Babies and to the Faulkner Hospital, Jamaica Plain.

Obituary

RICHARD CLEMENT LUCAS, M.B., M.S. (LOND.), F.R.C.S. (ENG.).

MR. RICHARD CLEMENT LUCAS, who died on June 30 at Oakland, Midhurst, Sussex, England, was born there in 1846. He studied medicine at Guy's Hospital and obtained the degree of M.B. from the University of London in 1871. He immediately became demonstrator and later lecturer in anatomy, and in 1875 was appointed assistant surgeon at Guy's Hospital. At the

same time he was developing a large and successful private surgical practice in London, devoting himself first to ophthalmic surgery, and later in particular to renal surgery. He was for a time vice-president of the Royal College of Surgeons of England and in 1911 delivered the Bradshaw lecture upon various problems in heredity. He was an occasional contributor to the columns of the *Lancet*. As a surgeon he was essentially an anatomist and in the teaching of anatomy he found, perhaps, his most enthusiastic activity. He is survived by two sons. The following vivid sketch of his personality by Sir Arbuthnot Lane appears in a recent issue of the *Lancet*.

"By the death of Richard Clement Lucas the profession loses an eminent surgeon and a remarkable man. His was a distinct personality which cannot be ignored when the surgery of the late Victorian era is under review, and his name will be always associated with the early development of renal surgery, in which subject he took a continued interest. He served Guy's Hospital for nearly half a century, and devoted an enormous amount of time and energy not only to his hospital duties but to the education of the students, in every one of whom he took a great personal interest. Quite a number of his colleagues owe their success in life to the stimulus which he applied to them by his interest and advice in the early stages of their careers. He used to ask the first year's men to meet him in order that he might discuss with them collectively and individually the best course for each to pursue in his work, and few who were present at one of those talks will forget the strong impression that he made upon the young student. Full of ambition himself, and indefatigable in work, he certainly possessed a wonderful power of inducing energy in others. In his prime he was a masterly operator—bold, rapid, and certain. Nothing pleased him more than a deep and extensive dissection in the neck, in which his dexterity and anatomical knowledge had full play. In his work he was always teaching the student, and the interest of his lectures was notably enhanced by the excellent lightning sketches with which he illustrated them. He wrote a large number of papers on anatomical and surgical subjects, in many of which he displayed remarkable originality."

Miscellany.

RISE IN THE PRICE OF DRUGS.

REPORT from New York on June 22 states that there has been a general rise in the price of a large number of drugs since June first of this year, chiefly on account of the disturbance of the market involved by the European War. The cost of quinine, for instance, has recently been

advanced 32 cents per pound. This drug now costs 30 cents per ounce in hundred ounce quantities and 35 cents per ounce for smaller amounts.

"English interests have purchased upwards of 350,000 ounces of quinine sulphate in the American markets in the past four months. This quinine has been utilized in combating malaria, coughs, colds and other maladies prevalent in the European war zone. It is understood that England as purchasing agent for the Allies has placed forward orders for the great bulk of the United States quinine production to the end of this year. One recent shipment of 25,000 ounces of quinine which was forwarded from New York to London on the steamer *Inkum* was lost through the torpedoing and sinking of that steamer on June fifth by a German submarine.

"Further reasons for the unabated strength now shown in quinine and all its minor salts lie in the fact that the shipments of cinchona bark from the Island of Java to Europe for the first five months of the current year have only amounted to 2,215,000, kilos, compared with 3,103,500 kilos in the corresponding five months last year and 2,781,200 kilos in 1913, and 2,311,500 kilos for the corresponding period in 1912. The shipments for the month of May were only 450,500 kilos against 612,000 kilos in May, 1914, 488,000 kilos in May, 1913, and 689,000 kilos in May 1912. It is thus clear that the shipments of basic material have been naturally curtailed and that this has not been the real reason for the sharp advance in prices for the salts at the London and Amsterdam salts auctions where a unit of $1\frac{1}{4}$ d is now generally being realized.

"There has also been a rise of 25 cents per pound in the price of opium which now costs \$7.25 per pound in cases, powdered opium being \$8.25 per pound.

"While ostensibly basing their advance asking figures for this narcotic on reports that the Turkish Government had imposed an embargo on all shipment of the gum from Turkish possessions, it was believed that the action of the importers was based more generally on the knowledge that customers will buy more readily on a rising than a declining market. The consensus of opinion among the trade is that the advance in this article is not warranted as the stock in the United States is now at the largest point in the history of the drug trade. It is also known that the necessity of observing all the requirements of the Harrison Anti-Narcotic Law as well as the supplementary state statutes of similar character has materially restricted the buying of this article."

"The history of the drug trade reveals no more astounding chapter than that which has been written the past few weeks. Fine medicinal as well as technical drugs and chemicals have advanced to a point where values are 500- to 5000-fold inflated. Speculators and second-hands are virtually reaping a harvest. Manufacturers are in a majority of incidences sold

out of certain wanted materials for periods ranging from six months to a year ahead. So far as imported goods are concerned, it is known that harvesting and manufacturing operations in leading French, German, Russian and English drug centers are either at a minimum or are practically suspended. The high record values prevailing in the domestic markets are justified to some extent, however, as export demand has also been in evidence and has reduced the spot supplies of most materials to negligible proportions. Exact statistics are not yet available, but it is known that during the first two months of the current year the total export of drugs, chemicals and medicines from the United States amounted in value to \$7,460,000 against \$3,986,000 in the same time in 1914, and \$4,157,000 in the corresponding two months of 1913.

"While drug values in general have fluctuated in accordance with supply and demand considerations it is contended by some well known interests that present prices do not portray conditions prevailing. Epsom salts are a fair example of an article which is available in the United States in plenitude. Prices have, however, been jacked up to a basis of \$3 per hundred weight within the past three weeks against a price of \$1.75 per hundred weight on June 1. Caustic soda, an alkali product used generally in soap making, reflects the demand from Europe as well as the domestic explosive trades at its present high record figure of 3.25 @ 3.50 per cwt. Various factors have sold out their entire output of this material for months to come.

"All quicksilver preparations have been subjected to further sharp advances and dealers are now offering them very sparingly. Santonine, the active principle of Levant wormseed, grown and manufactured in Russia, has undergone an advance of \$13.50 to \$23.50 per pound since June first, owing to the reports of a great shortage in this year's crop of the seed. Russian isinglass, utilized in clarifying beverages, has also advanced sharply and at its present level of \$6 per pound is no longer regarded as a commercial article.

"A continued shortage of muriate of potash, utilized in manufacture of bicarbonate of potash, bichromate of potash, carbonate of potash, chlorate of potash, prussiates, saltpetre and a host of other technical chemical preparations, has sent prices for the preparations mentioned to still higher levels and values are now merely nominal, as holders ask whatever price their conscience dictates. A development of interest yesterday was the announcement by manufacturers of boric acid of a further advance of $\frac{3}{4}$ cent per pound, making the revised figures for crystals and powdered 9 @ 10 cents per pound. A fresh advance of $\frac{1}{2}$ cent per pound was also announced by manufacturers of borax which was held at 5 $\frac{1}{4}$ @ 6 cents per pound."

Report from New York on July 14 states that the prices of Norwegian cod liver oil have also

advanced to \$100 a barrel from \$45, an increase of \$55, or 122%.

"The sharp elevation of prices follows cable advices that the cod fishing season abroad closed with a reduction of 14,000,000 fish, or 21%, noted in the total catch as compared with a year ago. Cables also conveyed the information that Germany had bought heavily of the 1916 output and that over 50% of the total production had been absorbed in this way. It is said that a group of European speculators have succeeded in obtaining control of all but a meagre proportion of the remaining stocks and that cod liver oil is destined for still higher prices.

"The market flight of cod liver oil does not find adequate justification in comparison of final fishing returns from Norway, the total output for the year just closed having been 66,800,000 fish, which yielded 45,620 barrels of refined oil as against 81,500,000 fish or 49,285 barrels of oil for the former season. The fundamental explanation lies in the abnormally heavy demand for Norwegian cod liver oil for German mechanical war requirements, chiefly as a lubricant in the various lines of motor service, the use being even extended to aeroplanes through the refining process eliminating the stearine. The medical application of the oil was also found especially beneficial in relieving the painful physical effects of extreme cold upon the German soldier.

"Prompted by the elevation of prices for the various brands of cod liver oil, including Holme's, Devoe's, Duval's, Dervell's and Isdahl's to \$100 per barrel, there have been sharp speculative operations in the New York market, and all lots available below \$75 per barrel have been snapped up. Evidence of the lightness of American stocks and the consequent restrictions in extensive speculation here are furnished in the record of our imports for the first six months of the current year, which amounted to only 1700 barrels as compared with 4200 barrels, 2800 barrels, and 3900 barrels for the corresponding periods of 1914, 1913 and 1912 respectively.

"Of the current production of 45,620 barrels, the Lofoten fishing, usually relied upon for the finest grades of refined oil, has contributed about 11,000 barrels from 16,000,000 fish as against 8200 barrels from 12,000,000 fish last year. Fishing operations in Norway were not only handicapped by loss through seizure and sinking of trawlers the past season, but stormy weather created difficulties hard to overcome."

Following this phenomenal rise of value in Norwegian oil there has been a rise of Newfoundland oil from \$40 to \$50 a barrel. This oil, though not so refined in quality as that in Norway, will probably now be extensively employed as a substitute.

"There has been a marked improvement in Newfoundland's refining process during the past year or so and this has placed it on a better competitive basis with the Norwegian grades.

The season in Newfoundland gets into headway with the close of the season in Norway, and possibilities of profit under existing prices should hasten operations, especially in view of the fact that England is expected to draw heavily on this year's yield."

It is also announced that the price of thymol has advanced from \$2.00 to \$12.00 a pound, an increase of 500%. "The advance is due to the scarcity of supplies and the active demand from manufacturers of antiseptic washes and dental preparations, who report considerable difficulty in securing sufficient thymol for their users, being forced to bid in competition with exporters who have been buying freely on orders from France and England.

"Germany has up to this time enjoyed a distinct monopoly in thymol manufacture. The article is produced from anjowan seed grown in India. Germany's requisitions on the anjowan seed production in 1914 were 6990 cwts., out of a total production of 9784 cwts., while in 1913 her takings were 19,055 cwts. out of a total production of 21,650 cwts., and in 1913 her takings aggregated 14,210 cwts. out of a total of 15,515 cwts. produced. Thus far this season Germany has taken over 6000 cwts. of the Indian anjowan seed production and the United Kingdom has only secured 382 cwts.

"It is impossible to estimate accurately what the production of thymol in Germany amounts to. It is reckoned, however, that the output of thymol from anjowan seed is about 1 1/4%, so if it is assumed that the whole of the seed shipped to Germany was used in the manufacture of the drug, the production in that country from Indian seed would amount to 177 cwts. in 1911-12, 238 cwts. in 1912-13, and 87 cwts. in 1913-14.

"As in the case of other drug and chemical products, the high prices for thymol have stimulated production in other parts of the world. A despatch from Bengal, India, says that a laboratory worker in the Bengal Chemical and Pharmaceutical Works has been the first to produce thymol. This despatch was contradicted, however, in advices from London which stated that thymol has been made in certain districts in India for the past sixty years. This despatch stated that the manufacture of the article had been discontinued when the low prices for the German product made it unprofitable some years ago, but that Indian interests had again commenced to manufacture it for their own requirements, and had shipped large quantities as well (one shipment of twenty tons being under way) to English firms."

All domestic manufactures of mercurial preparations have also advanced from three cents to eight cents a pound. "The great bulk of all quicksilver which has found its way from California to New York within the past few weeks has been taken by the Allies for manufacture of fulminate for percussion caps. Quicksilver values have again advanced for this reason, and little or any is now offered here at below \$100

and \$105 per flask of seventy-five pounds. Yesterday's action of domestic manufacturers brings quotations of soft mercurials in fifty-pound lots and over to a basis of 72 cents per pound for blue mass, 74 cents per pound for blue pills, 74 cents per pound for mercury and chalk, 90 cents per pound for mercurial ointment 1/2 and 80 cents per pound for blue ointment or mercurial ointment '1.3.' The new schedule on hard mercurials in fifty-pound lots is calomel, \$1.43; corrosive sublimate, powdered, \$1.30; corrosive sublimate, crystals, \$1.35; mercury bisulphate, \$1.21; red precipitate, \$1.56; red precipitate, powdered, \$1.66; white precipitate, \$1.66, and white precipitate powder, \$1.71."

The cost of potassium bromide has now risen to \$1.50 a pound.

These figures are of interest to physicians since they illustrate the effect upon the drug market of the disturbing economic conditions attending war. So far as possible in prescribing, physicians should endeavor in the interests of their patients to avoid those drugs whose prices have been most unduly advanced, employing equivalent substances wherever possible.

TREPHINING AMONG THE PERUVIAN INDIANS.

A RECENT issue of the *New York Times* calls attention to a detailed description by Dr. Joseph C. Thompson of the United States Navy Medical Corps of the methods of trephining practiced by the Peruvian Indians early in the Christian era. This description is based on a study of over 5000 pre-Columbian Indian skulls collected by Dr. Hrdlicka, curator of the division of anthropology of the National Museum at Washington, D. C.:-

"These ancient Peruvian Indians observed that once in a while warriors who had received a serious injury of the head recovered instead of dying. In the course of time they learned that these recoveries were due to one of several causes.

"The skull, in the living subject, is very resilient, and it may have happened occasionally that when a piece of the skull wall was displaced or dented, thus compressing the brain, this offending fragment suddenly sprang back into place, thereby relieving the symptoms and affording the patient a chance to recover. Among primitive peoples some very curious ceremonial rites take place over the dying. These rites, at times, assume the character of a vigorous massage of the body, and they even tapped the head of the dying man with a baton. This latter action might readily result in a lucky repair of the broken skull.

"Then, again, after a warrior had lain unconscious for many days, the splintered and broken bits of bone might necrose and be sloughed off at

the bottom of an open sore. This also might have resulted in a recovery.

"When the medicine men had observed these phenomena a few times, their next logical step would be to attempt to assist nature in her processes of restoration. They did this by prying the displaced fragments into place and by digging out, often with their finger tips, splintered bits of bone. Another of their observations was that a wound with sharp, clean-cut edges would heal much more rapidly than one with a rough or jagged contour.

"The result of their observations was that they attempted to convert the rough, irregular gashes in the skull into smooth, clean-cut surgical wounds. This was usually done by scraping the edges of the break with the sharpened flints.

"They further advanced in the science of physical diagnosis to the point of observing that, now and then, a warrior died from a really small fracture of the skull. This led them to operate quickly, and some of the slender pieces of sharpened flint may have been used to raise the crushed portion of the skull, after an incision had been made."

Correspondence.

PRUDENTIAL HOSPITAL ASSOCIATION COMPANY.

BOSTON, JUNE 28, 1915.

Mr. Editor: In regard to letter of Horace D. Arnold, M.D., in your issue of June 24th, the impression is conveyed, that a gentleman of the Prudential Hospital Association Co., had made an unauthorized use of the Doctor's name.

We beg to state explicitly the Dr. Arnold, whose name our agent gave as reference, was Dr. Seth Arnold, a member of our hospital staff.

This physician too hastily reached the erroneous mental conclusion that there was only one Dr. Arnold (Horace D.), in Boston, whereas our agent knew only the one on his list, viz.: Dr. Seth Arnold.

This explanation shows no wrong intent on our part and through your kindness we trust that you will give space in your medical journal to correct the wrong impression this physician gave to Dr. Horace D. Arnold.

Yours very truly,
PRUDENTIAL HOSPITAL ASSOCIATION CO.
F. O. BLAZIER, President.

BELGIAN PHYSICIANS' RELIEF FUND.

REPORT OF THE TREASURER OF THE COMMITTEE OF AMERICAN PHYSICIANS FOR THE AID OF THE BELGIAN PROFESSION FOR THE WEEK ENDING JULY 17, 1915.

CONTRIBUTIONS.

Muskegon Oceana Medical Society, Muskegon, Mich.	\$ 25.00
Dr. Robert F. Taylor, Philadelphia, Pa.	5.00
Dr. Francis Reder, St. Louis, Mo.	10.00
Dr. Charles D. Lockwood, Pasadena, Cal.	5.00
Dr. J. W. Ellenberger, Harrisburg, Pa.	5.00
Dr. Charles N. Dowd, New York, N. Y.	25.00

Receipts for the week ending July 17th.....\$ 75.00

Previously reported receipts..... 7625.84

Total receipts.....\$7700.84

Previously reported disbursements:

1625 standard boxes of food @ \$2.20..\$3575.00

1274 standard boxes of food @ \$2.30.. 2930.20

353 standard boxes of food @ \$2.28.. 804.84

Total disbursements.....\$7310.04

Balance \$390.80

F. F. SIMPSON, M.D., Treasurer,
7048 Jenkins Arcade Bldg.,
Pittsburg, Pa.

RECENT DEATHS.

DR. ROBERT HUGH MCKAY DAWBARN of New York, who died in that city on July 18, was born in Westchester County, N. Y., in 1849. He had been for many years professor of surgery at Fordham University Medical School and was connected with several New York hospitals. He received the degree of M.D. from the New York College of Physicians and Surgeons in 1881. He was appointed instructor in minor surgery at the College of Physicians and Surgeons in 1885, and in 1887 became professor of surgery and anatomy in the New York Polytechnic School. He was a frequent contributor to medical periodicals and in 1902 was awarded by the Philadelphia Academy of Medicine the Samuel E. Gross prize for the best original work in surgery during the previous six years. He was a member of many medical and scientific societies. He is survived by his widow, one daughter and two sons.

DR. FRANCIS DELAFIELD of New York City died of apoplexy on July 17 at Noroton, near Stamford, Conn. He was born in New York City on August 3, 1841, the son of a physician. He received the degree of A.B. from Yale University in 1860 and that of M.D. in 1863 from the New York College of Physicians and Surgeons. In 1866, after studying abroad, he became curator to the Bellevue Hospital, where in 1876 he was appointed visiting physician and in 1880 consulting physician. He was also pathologist at the Roosevelt Hospital and at the New York Eye and Ear Infirmary and was professor of pathology and of the practice of medicine at the New York College of Physicians and Surgeons. He was one of the founders and the first president of the Association of American Physicians in 1886. He has been distinguished as a medical writer as well as a practicing and consulting physician. The best known works of which he is author are "Handbook of Post-Mortem Examinations and Morbid Anatomy," "Manual of Physical Diagnosis," "Studies in Pathological Anatomy," "Diseases of the Kidneys," and "Handbook of Pathological Anatomy and History." He is survived by three daughters and one son.

DR. CHARLES PARKER HOOKER, who died of pneumonia on July 21, at Fortune Rocks near Biddeford, Me., was born in Springfield, Mass., on September 18, 1855, the son of a physician. After obtaining his early education in the local schools he undertook the study of medicine and received the degree of M.D. in 1879 from the Harvard Medical School. He early became associated with the Springfield Hospital and with the Mercy Hospital in Springfield, and maintained his connection with these institutions throughout his busy professional life. He was also for thirty years county physician of Hampden County. He was a charter member and former president of the Springfield Medical Club and a director of the Springfield Academy of Medicine. He was also a member of the American Medical Association and a Fellow of The Massachusetts Medical Society. He was a Councillor from the Hampden District from 1911 to 1914, having joined The Massachusetts Medical Society in 1879. He is survived by his widow, one daughter and one son.